

# RG 104 - Entry 23

Box 1, Vol 1 February 5, 1906 - July 6, 1909

1906 - 1940

Copies of Letters and Reports sent to the  
Superintendent of the Denver Mint by the  
Melter & Refiner's Department



## MANN'S PARCHMENT COPYING PAPER.

(TRADE-MARK REGISTERED.)

This Parchment Paper is **MUCH STRONGER** and shows a **CLEARER COPY** than any other ever made for the purpose. The ink is **LESS LIABLE TO SPREAD** and the paper can be written upon with a pen.

### DIRECTIONS FOR COPYING.

Place a piece of blotting-board under the leaf of Copying Paper; then, with brush, wet the leaf. Take off surplus water with another sheet of blotting-paper; then place the written letter on the leaf, (leaving the blotting-paper under the leaf, to take up any excess of water that may yet remain;) place it in the press, and, in ten or fifteen seconds, a perfect copy will be secured.

The leaves **WILL DRY AS SMOOTH AS SILK**, if the book is placed in the Press after Copying.

**Place oil-sheets between copies just made, to prevent blending or setting-off.**

### Another Process when many letters are to be copied.

Procure a tin or iron box, with lid, to hold 20 blotting-pads.—(Boxes furnished, if desired.)

Dip half the lot of blotters in water; let them drain off a few moments; then place a dry blotter between each wet one; give them a few minutes' squeeze in Press and they will remain wet for three days; then take an oil-sheet; place it to the left; then lay a wet blotter; then turn leaf of Copying over on blotter; then lay your letter on; then another oil-sheet, and so on; and you can copy all your letters at one time; thereby saving time. With a little care and experience, at first, as to wetting, you will be so well pleased, as never to resume the old way.

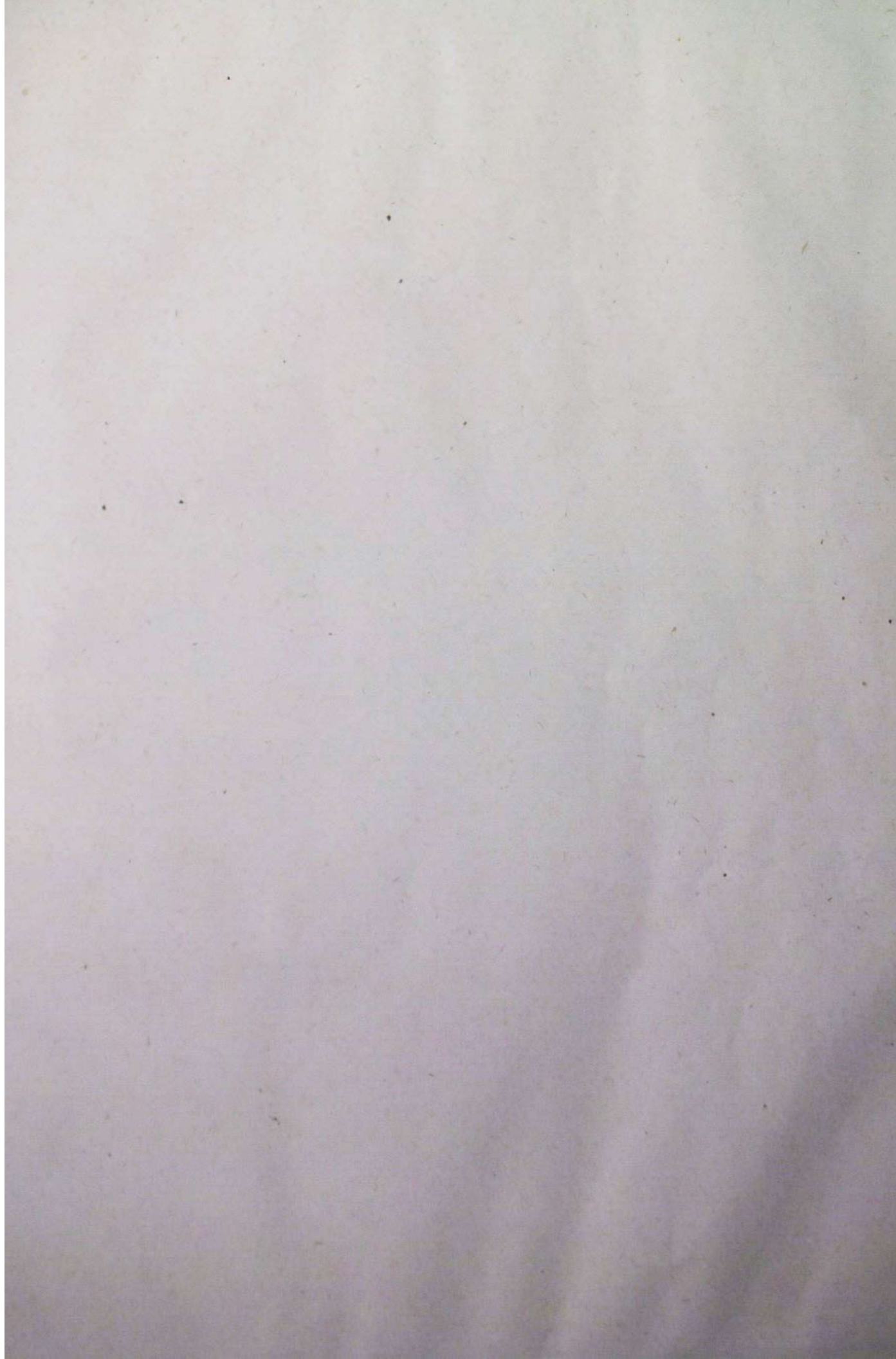
**HILL'S BLOTTER BATHS** are the best adapted for use in this Process.

To copy **TYPE-WRITTEN LETTERS**, the leaves require **MORE MOISTURE** than they do to Copy Letters written with **PEN AND INK**.

M. & R.'s Office  
U. S. MINT, DENVER

ИЗДАТЕЛЬСТВО  
И. В. С. С. С.





1  
Denver, Colo., February 5, 1906.

Hon. Frank M. Downer,

Superintendent, U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of nominating Benjamin M. Phillips for the position of assistant melter in the ingot melting room at a compensation of \$4.00 per day.

I request that the appointment be made immediately, to take effect from the date of his oath of office.

Respectfully,

*Joe. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Denver, Colo., Feb. 5, 1906.

Hon. Frank M. Downer,

Superintendent, U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of nominating George W. Spencer for the position of helper in my department at a compensation of \$3.15 per day.

I request that his appointment be made immediately, to take effect from the date of his oath of office.

Respectfully,

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, Colo., February 6, 1906.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of calling your attention to the fact that I have no place provided for the care of the files and books of my office, other than stacking them up on a table, and they are very much in the way there, as I desire to use the table for clerical purposes. I therefore earnestly request that I be furnished with a light fire-proof safe in which to place the files and books when not in use, as well as for safe keeping outside of office hours; as these books and files are of the greatest importance, it appears to me that adequate efforts should be made to prevent any accident befalling them, and I confidently trust that you will render me the necessary assistance to that end.

I think the safe should be in size about as follows:

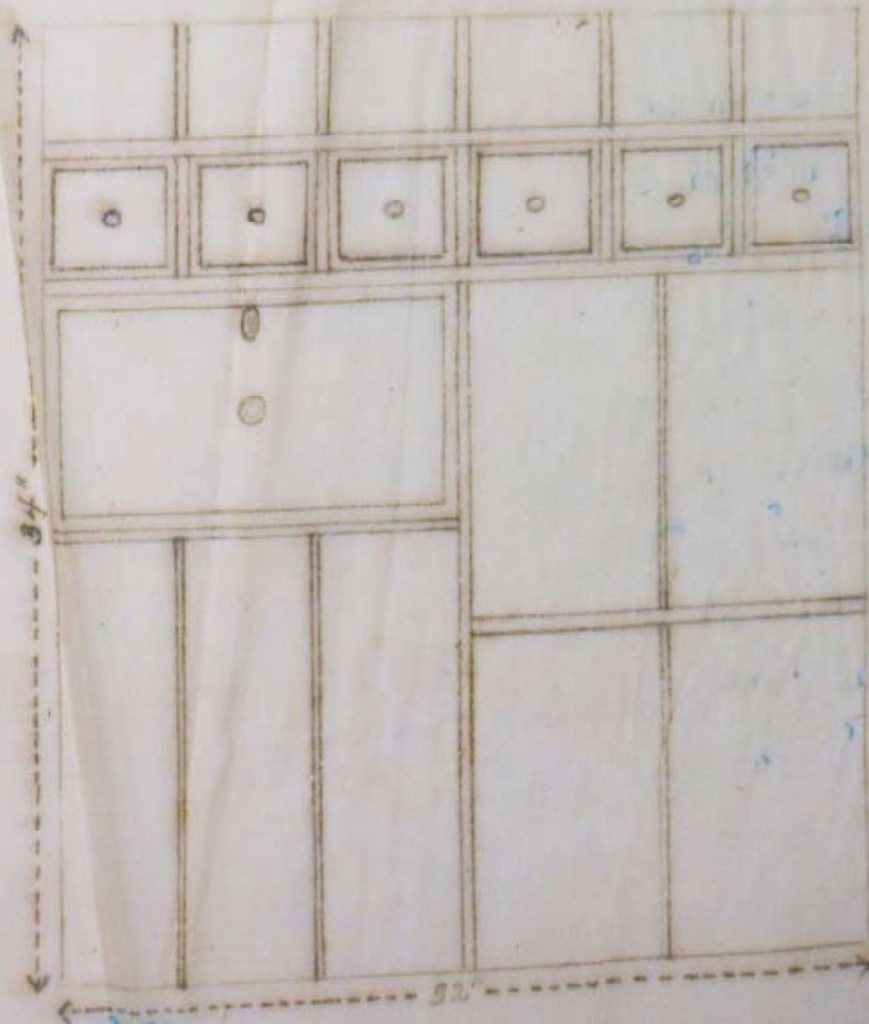
One book-stall 16 inches high, 16 inches wide and 18 inches deep, with 2 partitions dividing the space into 3 compartments;

Two book-stalls each 12 inches high, 15-1/2 inches wide and 15 inches deep, with one partition dividing each stall into 2 parts.

Six file drawers and 6 open compartments, and one lock compartment, approximately as shown in the following diagram:

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 2



Scale 1-1/2" to the foot.

Very respectfully,

*Joseph W. Millon*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, Colo., February 6, 1906.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of representing that the time has come when I am in urgent need of an assistant to the Amalgamator mill man in charge of the sweeps cellar. The work in connection with our treatment of sweeps is such that it cannot be performed by one man either economically or satisfactorily, and the foreman of that room has gotten his equipment in such shape now that he is practically ready to start operations and is very anxious (as am I) to secure an assistant so that there will be no delay in the operation of said department. I think this is very necessary as we have at least four months' work ahead of us to treat the sweeps now on hand, and as we have commenced general operations in all the melting rooms the sweeps will accumulate very rapidly.

I therefore request authority to nominate an Assistant Amalgamator and Mill man for said position at a compensation of \$4.00 per day.

Respectfully,

*Joe Wilson*

Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Denver, Colo., February 6, 1906.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver, Colo.

Sir:-

The bills for 10,000 pounds of ingot copper for alloy purposes have been received, but are not O.K.'d for the following reasons: One of the casks was received in a broken condition, and the amount of copper in said cask was 21 pounds short.

I therefore return the bills herewith, and await your further advice in the premises.

Very respectfully,

*Joe W. Wilson*  
Melter and Refiner.

Enclosure.

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11825

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, Colo., February 7, 1908.

Hon. Frank M. Downer,  
Supt., U. S. Mints,  
Denver, Colo.

Sir:-

I have the honor of nominating Xerxes T. Stoddard for the position on assistant melter in my department at a compensation of \$4.00 per day. I request that his appointment be made immediately, to become effective upon his taking his oath of office on the 1st inst., or any time subsequent thereto.

Respectfully,

*John W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINERS DEPARTMENT,

Denver, Colo., February 15, 1906.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of nominating Harry R. Whitehead as helper in my department at a salary of \$5.25 per day. I request that his appointment be made immediately to take effect upon his taking the oath of office.

Respectfully,

*James Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, Colo., February 15, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I respectfully ask permission to have McGreal, Ryan, and Peterson cut a hole through the wall of the refinery into the rolling room to tap the hot and cold water pipes, so as to get a connection on the filtering platform which will be ready for operation tomorrow. It will be necessary that this work be done after 4 p.m.; and it will require several hours to make the necessary connections. I would like to have the men start in today.

Very respectfully,

*[Signature]*  
Assistant Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, Colo., February 15, 1906.

Mr. F. E. Healy,  
Supt. Machinery,  
U. S. Mint., Denver.

Sir:-

I notice the electrician and pipe-fitter are using the refinery store-room to store their waste pipe and electrical wires, etc. Please have this stuff removed, as we wish to clean this room and put it in thorough shape.

Respectfully,

Assistant Melter and Refiner.

*R. X. W.*

MIINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

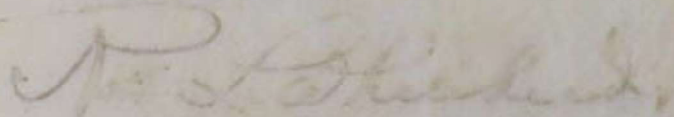
Denver, Colo., February 16, 1906.

Mr. F. E. Healy,  
Supt. Machinery,  
U. S. Mint, Denver.

Sir:-

Please have carpenter put in two floors on filtering platform in refinery the first thing in the morning, if possible. Also have electrician put an extension light in Vault G in the make-up room sufficiently long to reach to either end of the vault. This is also a rush job.

Respectfully,



Acting Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Denver, Colo., February 17, 1906.

Hon. Frank M. Downer,  
Custodian U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor to report that due consideration has been had of the communication of the Supervising Architect, under date of the 12th inst., and inclosure 7082 accompanying same, referred to this department on yesterday.

The shell safe as described is sufficient and satisfactory. With reference to the diagram of interior fittings, and the notation thereon that "it is not clear whether the custodian intends this to be a drawer or a compartment covered with a wooden or metal door hinged at the right side. He should state which", I beg to recommend that the same be made a compartment covered with a metal door hinged at the right side with flat key lock on the left side of said door.

Respectfully,

*Joseph Milburn*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

February 23, 1906.

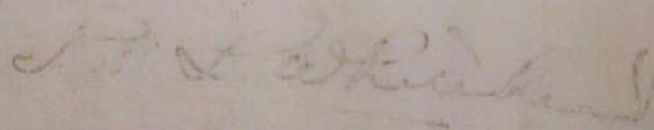
Hon. Frank M. Downer,

Supt. U. S. Mint, Denver.

Sir:-

Please have Superintendent of Machinery, Mr. Healy order 2-1/2 dozen half-eagle molds, the dimensions for which are now in his office. Also fix up, according to instructions, 12 small molds. These molds have to go through the machine shop after they have been cast, and planed down to a smooth surface. Also please have 43 ingot boxes lined with 1/32" sheet copper and 12 large ingot boxes so lined. The copper for this work is on hand in the lead-burner's shop. As we expect to start on gold again next week, it is very necessary that we have copper lined boxes to hold our ingots. At the present time we have only six three in the refinery and three in the ingot melting room.

Very respectfully,



Acting Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

February 23, 1906.

Mr. Daniel Brady,  
Foreman Deposit Melting Room,  
U. S. Mint, Denver.

Sir:-

Please turn over the key to the sweeps cellar which I believe  
is now in your possession to the foreman, Mr. Smith, and oblige

Yours respectfully,

*John L. Leitchhead*

Acting Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

February 23, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

Attached to this letter is a rough sketch of an acid hood which we wish constructed so as to fit on the lower end of the gold cells; the lower part of hood to be made of oak or hard wood; all four sides of hood to be glass; top of hood to be made of eight-pound sheet lead, with an 8 inch pipe connection entering the main exhaust pipe from the condenser.

We should like to have the carpenter fix this as soon as possible so that we can shift our porous cells from the main acid hood to this location. Any details necessary for the construction of this hood will be furnished upon application by the superintendent of machinery.

Very respectfully,

*W. H. ...*  
Assistant Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

February 26, 1906.

Hon. Jos. W. Milson,  
Melter and Refiner,  
U. S. Mint, City.

Sir:-

Due to the fact that we have green men on at night in the refinery who are not familiar with electrical machinery, I recommend that an electrician be put on who can be called in in case there is any trouble with the dynamos furnishing the current for the electrolytic refining. It is absolutely necessary that some action be taken in this matter to prevent injury to the machinery.

Respectfully,

*W. H. Whitehead*  
Assistant Melter and Refiner.

Feb. 26, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint.

Sir:-

I have given the above matter due consideration and heartily endorse the recommendation of Mr. Whitehead. I think the putting on of an electrician will save very much more than his wages in protection to our machinery. I earnestly suggest that action be taken at the earliest moment possible.

Very respectfully,

*W. H. Whitehead*  
Melter and Refiner.

## MINT OF THE UNITED STATES AT DENVER,

## MELTER AND REFINER'S DEPARTMENT,

February 26, 1906.

Hon. Frank S. Downer,

Super. U. S. Mint,

City.

SIR:-

I herewith submit a report of authorized overtime from Jan.

28th to date:

Jan. 30		
Patrick Ryan	4	hours
Olaf Peterson	4	"

Jan. 31		
W. J. McGreal	3	hours
Olaf Peterson	2	"
Patrick Ryan	2	"

Feb. 1		
W. J. McGreal	2	"
Patrick Ryan	2	"
Olaf Peterson	2	"

Feb. 11 (Sunday)		
Forster	8	hours
Peterson	8	"
Boyle	8	"
Rucker	8	"

Feb. 15		
McGreal	6	"
Ryan	6	"
Peterson	6	"

Feb. 19		
McGreal	3	"
Rucker	2	"
Ryan	2	"

Feb. 22		
Rucker	6	"
Boyle	12	"





U. S. Military Reservation,  
Point No. 200,  
SEA 4 10 1983 500. - 4 x 1046

## MELTER AND REFINERS OF BULLION BALANCES.

Print of the United States at Denver, Colorado

Gold and Silver Bullion Balances in the Melter and Refiners hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of February, 1906.

**GOLD.**

[illegible]

SILVER.

THE UNIVERSITY OF CHICAGO

March 1<sup>st</sup> 1861

*Leptocarpus*

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

March 1, 1906.

Hon. Frank M. Downer,

Supt. U. S. Mint,

Denver, Colo.

Sir:-

Supplementing this department's requisition No. 26, under date of February 27, 1906, this department is in need of the articles therein enumerated, to wit: porcelain ware, 4 jars, fig. 01240, capacity 108 litres; 8 tanks, No. 1377, dimensions 18"x13"x12"; 4 vessels similar to fig. 01779, and same as heretofore furnished, with sieve-plate and stop-cock for each and 4 extra stop-cocks for same vessels; and the following earthenware, 3 vessels similar to fig. 148 (and same as heretofore furnished) with sieve-plate and stop-cock for each and also 3 extra stop-cocks for these vessels.

I respectfully request that you procure a proposition for these articles from Frederick Bertuch & Co., Room 907 Temple Court Building, New York, which is the only firm that I know of that can furnish these goods.

Respectfully,

*J. C. [Signature]*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Denver, March 9, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor as well as the pleasure of hereby responding to your request of this forenoon for information regarding progress in the Melter and Refiner's Department.

February 1st, we began the operations of parting in the Refinery with four gold cells, which we have now increased to fourteen (the maximum number that we can operate with our present force). On February 7th we received from the Refinery our first fine gold melt which weighed 5640.50 oz., of a fineness of 999.2, which was the lowest fineness that we have produced, and that was caused by the lack of fine gold for making our cathodes; that which we used for that purpose being only 995 fine; however, as we progressed with our work, using constantly increasing fine gold for making cathodes, the fineness increased until our last melt (No. 20) weighing 7528.25 oz. received yesterday (and being the product of seven cells running 48 hours) was of a fineness of 999.39 plus. In fact, two of the assays checked perfectly with the proof gold used. Having thus proven conclusively that we can make practically pure gold, we shall hereafter confine our energies more to increasing the production, feeling confident that the fineness will take care of itself, and run 999.7 (which is the average of the last dozen

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Downer - 2

melts) to 999.9. The total amount received from the Refinery, February 7 to March 7, inclusive, was 133,414.74 ozs. gross, of an average fineness of 999.604 plus.

On February 20th we delivered to you our first melt of gold ingots, and on that and subsequent days including today, we have delivered 61,937.77 standard ounces of Eagle ingots of an average fineness of 999.875 plus; and 27,568.09 standard ounces of double Eagle ingots of an average fineness of 999.9 plus.

We have not yet operated our silver cells, but have done considerable experimental work relating to them, and Mr. Whitehead is quite confident that later he will have some pleasant news to communicate on that line.

With an earnest desire to strengthen our weakest point, I will call your attention to our Refinery Melting room: At your suggestion, I have transferred Charles W. Dakin from the Deposit Melting room to the Refinery Melting room, and while that helps the situation to the extent that it relieves others in the <sup>hot</sup> work, yet it does not cure the weak spot, which is the small space and intense heat caused by our inability to ventilate the room. As you remember, the space is very limited, and the only windows are two small ones opening to the South, and with the oil fuel the heat is so intense that it is difficult to work with two furnaces operating, and of course much more so to use the three furnaces at the same time; and when you consider the fact that all the gold we operate

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Downer - 3

upon is melted about two and one-half times in that room, that is, first, it is melted and cast into Anodes; second the anodes are melted and cast into fine bars, and third, the undissolved portions of the anodes have to be remelted, not to mention the king of sweats, etc.,--it does appear that it will be absolutely necessary to make some provision to relieve the intense heat before the warm weather arrives, as well as to permit us to do the additional work that will become necessary by the increase of partings the Refinery. Moreover, for the purpose of perfecting all our operations, we should have a small reverberatory copper furnace, of one-half ton capacity, so that we could produce a copper anode for alloy purposes; such a furnace would not be expensive, in my opinion would effect a saving of its full cost in from one to two years, as our gold deposits contain considerable copper as evidenced by the fact that we already have accumulated about 250 lbs. If the Refinery melting room could be enlarged in some way, it would give us the room for placing such a furnace.

The work of fitting up our Sweep cellar has been slow, owing to the fact that everybody was so busy perfecting inside equipment that we had to rely upon the sweep cellar foreman to do most of the work; however, the foreman and his assistants proved to be competent men, and they now have the hot and cold water steam and sewer pipes all run and connections made, including coils for heating purposes, and we expect to start the mill Monday

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver 4

next.

silver  
operations on uncurrent coin are represented by the de-  
livered ingots containing 177,390.20 standard ounces.

Respectfully submitted,

*J. W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER.  
MELTER AND REFINER'S DEPARTMENT.

March 15, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

Reluctant as I am at the present time to broach this subject, yet I feel the absolute necessity of having more help in the refinery and ingot melting room. On Sunday I sent two of the refinery men--one cell man and the helper--were sick, and I could at that time find only one substitute to take the place of the two men who were off duty. This has occurred several times with one absentee, but never before with two in that department. However, if all the present employees were present constantly, we still have more work than they can possibly do within the hours of their labor.

As to the ingot melting room, our force at the present time consists of the foreman, one assistant melter and two helpers, and we have been confronted in the past with the following circumstances: One of the helpers was injured while at work; a few days before the foreman was afflicted with a very severe carbuncle which practically incapacitated him from work; and on yesterday the assistant melter was injured while at work. This condition has left us, for a large part of the time in the ingot melting room, which has necessitated overcrowding the other men to the extent that they cannot do the most careful and best work.

I know that you as well as myself are most earnestly

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver - 2

keep down the force of employes to the lowest point compatible with good work and economy; but it does seem to me, considering these points, that I should have an additional day helper in the refinery and an assistant melter in the ingot melting room. I therefore most respectfully yet earnestly request authority to appoint an additional helper in the refinery and an assistant melter in the ingot melting room.

Trusting that I may be advised with reference to this matter at the earliest convenient moment, I remain

Very respectfully,

*J. W. Milson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

TO REFINERY EMPLOYEES:

It has come to my knowledge that a proper degree of carefulness is not always displayed in connection with your work; porcelain and earthenware is sometimes handled without due consideration of its brittleness, and solutions are occasionally spilled without any serious thought of their value.

Unnecessary losses must be prevented in some way, and, as a preliminary step in that direction, the foreman is hereby ordered to report to me the names of employes causing losses of any kind, together with the approximate amount of the loss in each case. Such data will be preserved for the purpose of intelligently estimating the character and value of your services as employes.

*Jo. C. Wilson*  
Melter and Refiner.

March 20, 1906.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

March 30, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of hereby nominating Benjamin M. Phillips for the position of helper in the Refinery. I request that his appointment be made to take effect April 2, 1906.

Very respectfully,

*Joe. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

March 31, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor to hereby nominate Karl G. Bell for the position of helper in the refinery. I recommend that his appointment be made immediately, to take effect on April 2, 1906.

Very respectfully,

*J. C. Wilson*  
Melter and Refiner.

## MELTER AND REFINERS OF BULLION BALANCES

Print of the United States at Denver, Colorado  
Gold and Silver Bullion Balances in the Melted and Refiners hands and Receipts from and Deliveries to the  
Superintendent of the Mint by him during the month of March, 1906.

## GOLD

STANDARD OUNCES.		Delivered	
Received		Ingot	3551 (2357 £; 1200 £.)
Balance	March 1	Bars, Fine	241 563 190
Exchanged in Gold Deposits	175	Bars, Standard	
Exchanged in Silver Deposits	653	Bars, Unpurced	
Continued in	57	Bars	
(Clippers, Banks, etc.	684	Sweep	
	360		
		Balance	March 31
			100
			645 321 900
			886 885 090

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STANDARD OUNCES.		STANDARD OUNCES.	
Delivered		Delivered	
Ingot	16 887 62	Ingot	55 222 75
Bars, Fine	47 098 91	Bars, Fine	
Bars, Standard		Bars, Standard	
Bars, Unparted		Bars, Unparted	
Bars	33 033 50	Bars	
Sweepings	33 567 05	Sweepings	
Balance	130 587 08	Balance	75 364 33
			150 587 08

TO THE  
CARE OF  
Messrs. W. D. Brown  
Superintendent

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Denver, April 10, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

On the 2d inst. and again on the 8th we were compelled to close down some of our gold cells temporarily, and last night we had to cut three out entirely for lack of anodes, caused by the inability of the Refinery melting room to get a sufficient quantity ahead to run over Sunday. The melting room crew is first class in every respect, willing and anxious to keep up with their work, but it is practically impossible to do it by working six days of eight hours each, while the Refinery runs seven days of twenty-four hours each. It is not alone the fact that the melting room gets behind with its anode and fine gold melts, but the floor sweeps are accumulating constantly with but very rare opportunities for making sweats to reduce them; and further, the operation of the silver cells, which we have commenced, makes additional work in said melting room; and as we cannot possibly add another furnace to our equipment on account of lack of space, it appears to be absolutely necessary to either reduce the number of gold cells in commission, or make arrangements for a limited amount of overtime work for said melting force.

I am not in favor of Sunday work, where it can be avoided, and I therefore recommend that the Refinery melting room force, con-

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Downer - 2

existing of Boyle, Dakin, Stoddard, and Bucher, be permitted and authorized to work overtime each day, when necessary, sufficiently long to make one additional melt, but not exceeding two hours.

Respectfully,

*Jo. W. Milcom*  
Melter and Refiner.

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MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, April 13, 1906.

Hon. Frank H. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of respectfully submitting for your consideration and disposition the following facts and recommendations relating to the Refinery melting room:

When the question of finding a suitable place for a Refinery melting room was originally taken up, I recommended cutting off the south end of the machinery room for that purpose; but, upon a full consideration, it was found that the machinery department could not spare any of its space; and then the proposition of cutting off the south end of the adjusting room was broached. This seemed an ideal place for the melting room, as it connected directly with the east end of the Refinery and was not only large enough for our equipment, but contained a big east window to assist in the matter of ventilation. However, owing to the objection of the Coiner, we went only part of the way across the adjusting room, which left the melting room much too small, and with its only openings a door into the Refinery and one and one-half windows with a south exposure; so that we were precluded from any possibility of satisfactory ventilation or increase of equipment.

The work of the last two months has shown conclusively that with the use of oil fuel the heat is so intense that it is very

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 2

difficult to do the work in our present quarters; and before the heat of summer is added through the south windows, some remedy must be found, and I know of none unless it be by enlarging the room and giving better ventilation. At present we have three furnaces in commission, usually using two for melts and one for sweats, and as I informed you in a communication under date of the 10th inst., we cannot at the present time keep up with the necessary work in that room; but if it is enlarged, we can immediately add another furnace which will assist materially in doing the work as well as fortifying us against possible break-downs. And it seems that the necessity for such changes and additional equipment must be conceded when consideration is had of the fact that in that room we melt all the gold operated upon in this mint about two and one-half times, and this week we commenced operating two silver cells which, as we add more cells, will still further increase the work. I therefore recommend that the Refinery melting room be extended all the way across the south end of the adjusting room so as to give us an east window for ventilation and space for additional equipment.

Respectfully,

*J. C. Williams*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, Colo., April 13, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor to respond to that portion of the Director's communication of February 28th regarding fuel oil, referred to this department, as follows:

We are using distillate oil for fuel purposes in all of our furnaces for which we are paying 5-1/2¢ per gallon, and for the fiscal year beginning July 1st, 1906, we shall need approximately sixty thousand (60,000) gallons in the Melter and Refiner's Department.

Respectfully,

*Joseph W. Nielson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, April 16, 1906.

Jos. W. Milsom, Esq.,  
Melter and Refiner,  
U. S. Mint, Denver, Colo.

Sir:-

As per request, I desire to make the following report on the melting furnace equipment furnished by the Rockwell Engineering Co. of New York for the Melter and Refiner's Department, United States Mint, Denver, Colorado:

The melting rooms are equipped as follows: The Refinery melting room with three furnaces to fit No. 60 to No. 80 Black Lead Crucibles; the Ingot melting room with eight furnaces of the same type and size; the Deposit melting room with three small furnaces of a different type, for crucibles from Nos. 14 to 30, and one large size for Nos. 60 to 80 crucibles.

The Refinery melting room is supplied with blast from a No. 3 Sturtevant Blower driven by a 7-1/2 H. P. Bullock motor, capacity of blower 650 cubic feet of air per minute at an average pressure at the burner of 11 ounces.

The Ingot melting room is supplied with air from a No. 5 Sturtevant Blower driven by a 15 H.P. Bullock motor, with an estimated capacity of 750 cubic feet of air per minute, with an average pressure at the burner of 11 ounces.

The Deposit melting room is supplied with air from a No. 4

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Milson - 2

Sturtevant Blower driven by a 10 H.P. Bullock motor, giving 700 cubic feet of air per minute, with an average pressure of blast of 11 ounces.

It will be seen from the above that each melting room is independent of the others as to its source of air; however, the Ingot and Deposit melting rooms supply lines are "by passed" so that either fan will supply blast in case of break down.

A close investigation of the long line of pipe from the the oil pumps in the basement shows the joints to be absolutely tight, allowing no leakage of oil into the building which would render a disagreeable odor.

The pumping system in the basement consists of two duplex steam pumps of a special design, for heating the oil by exhaust steam, thereby placing the oil at the burners heated to a temperature of 85 degrees F., which facilitates the complete combustion of the oil, thus reducing the amount of carbon deposited in the combustion chamber to a minimum.

The pumps are connected to two storage tanks with a capacity of 10,000 gallons each crude oil, so connected as to pump from either, and so that while using from one the other can be filled. This furnishes an easy way of ascertaining the quantity of oil consumed.

After using both crude oil and distillate, it has been found that the distillate gives the best results, being a thinner oil,

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Milson - 3

flowing more uniformly in the pipes, and giving a steady supply of oil at the burners, which insures a uniform heat, and very little adjusting of the burners.

The furnaces are constructed of steel plate and angle iron firmly bolted together, the only cast iron being the top plate. This insures the furnace from danger of cracking, which is so often the case when such a high heat is maintained. The furnaces are lined with best grade of Colorado fire brick; and with the higher heat obtained over gas, the bricks last from two to three months constant use. This is about the same as gas.

The wear and tear on the crucible from the high heat (2600 degrees to 2800 degrees F.) is less than in gas furnaces, due principally to the fact that in the latter furnaces of a similar type, the combustion takes place directly against the sides of the crucibles, gradually "scaling" the outside, and where the crucibles are defective, cutting a hole, thereby causing a broken pot. With the present furnace, the combustion chamber is to the right of the bottom of the pot, so that the force of the combustion is broken by the bricks, and the heat circulates around the crucible before going into the condensing flues. This is noticeable, as our crucibles do not scale until after eight melts. At the present time we are getting from 12 to 15 melts out of a crucible. This means from 60,000 to 70,000 ounces of gold. The melts of both fine and anode gold are made in 25 per cent less time than with gas. During the month of March, 1906, the Refinery melting

**MINT OF THE UNITED STATES AT DENVER,**  
**MELTER AND REFINER'S DEPARTMENT.**

Milson - 4

room melted approximately 500,000 ounces of all kind of gold with a consumption of 2,000 gallons of oil. This figures out \$110 for fuel, or 22¢ per thousand ounces melted. Gas furnaces would figure out about 38¢ per thousand ounces. With the work turned out in this melting room, it would have required 5 gas furnaces, instead of three fuel oil furnaces as now equipped. The results obtained here are much better than results obtained elsewhere where comparative tests have been run.

The work of the Ingot melting room is noticeable from the point of cost and losses of metal. The production for February and March was 277,445.41 standard ounces gold and 208,715.09 silver. The amount of oil consumed was approximately 2450 gallons, at a cost of \$34.75 which equals 27¢ per thousand ounces melted; and the apparent loss in the melting room in gold .25 ounces per 1,000 ounces, and silver .17 oz. per 1,000 ounces. In view of the fact that the weeps and flue dust are yet to be taken into account, it would indicate that the amount of copper added for oxidation would offset our loss in melting.

The results in the Deposit melting room are even more flattering. Five melts are now made where only three could be made with gas. The consumption of gas in December and January averaged \$34.00. The present consumption of oil is thirty gallons per day or \$4 per month. This shows a saving of nearly 50%. The melts are made in about half the time formerly taken.

MINT OF THE UNITED STATES AT DENVER  
MELTER AND REFINER'S DEPARTMENT.

Milsom - 5

It is my opinion that a quick high heat is to be desired; the less time the metal is exposed to a melting heat the smaller volatilization loss. A longer heat required to get a sufficiently high temperature for proper mixture before pouring will cause a higher loss than a short heat from 200 degrees to 30 degrees F. in excess of the pouring temperature, which are about the results as obtained with the present equipment.

Another feature of the present equipment which should not be lost sight of, is the cost of repairing as compared to gas furnaces. The iron nozzles of the gas burners burn off and have to be replaced which means dismantling the furnace to replace them; also the brick linings are more expensive and difficult to repair.

In the case of fuel oil, the only part of the furnace which is perishable is the fire brick nozzle which is lined with carbundum. This <sup>is</sup> easily replaced from the inside of the combustion chamber; while the lining of the furnace consists, with one exception of 9 inch fire brick, and the furnace can be repaired without removing any of the parts. A half day is all the time required for the work; in gas furnaces I have seen as much as two days consumed in relining and putting together a furnace.

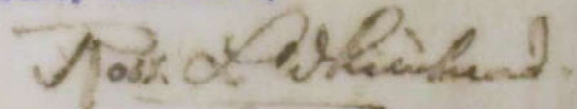
In conclusion, I wish to recommend our equipment as entirely satisfactory from every point of view. Of course it is not expected that the furnaces are perfection or that we will ever attain that degree in a melting furnace. There are times when there

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Milson - 6

is trouble, but by maintaining a uniform pressure of air, a constant and steady flow of oil to the burners with the oil heated to a uniform temperature when it reaches the burners, the furnace men will have little trouble in getting the results desired for good clean work. I consider the equipment as installed by the Rockwell Engineering Co. and as now operated here superior to any equipment in the mint service.

Respectfully submitted,

A handwritten signature in cursive script, reading "Robt. L. Whitchard".

Assistant Melter and Refiner.

**MINT OF THE UNITED STATES AT DENVER,**  
**MELTER AND REFINER'S DEPARTMENT.**

Denver, April 18, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of presenting the following as my estimate of the supplies necessary for the use of the Melter and Refiner's department, for the fiscal year commencing July 1., 1906:

Graphite crucibles, Dixon's No. 70 mint special	300
" " " " 30 - - -	50
" " " " 20 straight edge special	400
" " " " 14 - - -	400
" covers for " " 90 of crucibles	20
" " " " 70 mint special	100
" 4" rings " " 70 " "	125
" 2" " " " 70 " "	75
" stirrers, mint special, gold	50
" " plain, 14-1/2"	50
" " " 8-1/2"	400
" dipping cups, Dixon's No. 2	125
" " " " 3	250
" " " " 5	25
Clay Crucibles, Battersea "K"	400
Fire clay, best	1000 lbs

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

-2-

Lump charcoal	-	-	-	-	400 lbs.
Best lard	-	-	-	-	500 "
Lamp black	-	-	-	-	20 "
Benzine	-	-	-	-	15 gals.
Sulphuric Acid, Commercial 66° B	-	-	-	-	10,000 lbs.
Nitric Acid	"	-	-	-	25,000 "
Hydrochloric Acid	"	-	-	-	130,000 "
Bone ash, as per sample	-	-	-	-	7 bbls.
Saltpetre	-	-	-	-	6 "
Soda ash	-	-	-	-	6 "
Borax (ground) fused)	-	-	-	-	8 "
Silver sand	-	-	-	-	4 "
Cryolite, fine	-	-	-	-	5 "
Ground charcoal	-	-	-	-	15 "
Gelatine	-	-	-	-	200 lbs.
Ammonium Chloride, commercial, ground fine	-	-	-	-	50 "
Ferrous sulphate of iron (green vitriol)	-	-	-	-	12 bbls.
Muslin	-	-	-	-	3 bolts
Cotton duck	-	-	-	-	1 "
Rubber gloves, white flexible, best grade (sample to be submitted)	-	-	-	-	14 doz prs.
Rubber aprons (white rubber)	-	-	-	-	1 "
Leather gloves, buckskin or equivalent	-	-	-	-	100 prs.
Gauntlets, black rubber	-	-	-	-	4 doz prs.
Water hose, 5 ply, 3/4" diameter	-	-	-	-	100 ft.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

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2 doz plain white 1 gallon pitchers						
2 " " " plates						
Towelling	-	-	-	-	-	1 bolt
Asbestos mitts, as per sample	-	-	-	-	-	200
Carpet " " " "	-	-	-	-	-	300
Quicksilver -	-	-	-	-	-	200 lbs.
Brass screen, 80 mesh,	-	-	-	-	-	1200 sq. ft.
C.P. Nitric acid	-	-	-	-	-	500 lbs.
" Hydrochloric acid	-	-	-	-	-	500 "
" Sulphuric "	-	-	-	-	-	100 "
" Ammonia	-	-	-	-	-	250 "
" Acetic acid	-	-	-	-	-	50 "
Methyl alcohol	-	-	-	-	-	10 gals.
Rubber stoppers, assorted	-	-	-	-	-	1 gross
Pure red rubber hose, 1/8" diameter	-	-	-	-	-	50 ft.
" " " " 1/4" "	-	-	-	-	-	25 "
" " " " 3/8" "	-	-	-	-	-	20 "
" " " " 5/8" "	-	-	-	-	-	10 "
Iron gauze	-	-	-	-	-	6 ft.
Brass "	-	-	-	-	-	6 "

Respectfully submitted,

*Joseph Milner*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Denver, April 18, 1906.

Jos. W. Milsom, Esq.,

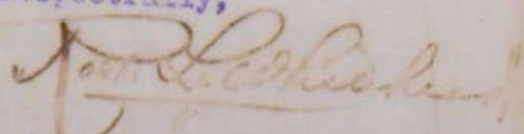
Melter and Refiner,

U. S. Mint, Denver.

Sir:-

I treated 670.45 ounces of clippings with gasoline, and found the difference of weight to be .05 of an ounce. This figure is .7 of an ounce per thousand ounces. On the present production of the coining room, say, 300,000 ounces, of which 35% are returned, or 105,000 ounces, this difference would be 7.35 ounces. The difference is caused by the dirt and dust in the room adhering to the clippings. While this is not a large difference, still it is sufficient to call their attention to it, so that they can cut down their oil to a minimum.

Respectfully,



Assistant Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

April 20, 1906.

Mr. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

Of the 15,027.33 standard ounces of gold clippings received from you on the 16th inst., we treated 670.45 ounces with gasoline and after thoroughly cleaning them they weighed 670.40 ounces, showing a loss of .05 of an ounce, or, at the rate of .074576 loss per thousand ounces; and based on the present amount of coinage (about 270,000 standard ounces, of which approximately forty per cent, or 108,000 ounces are returned in clippings), the loss to our department would be 8.4542 ounces per month. The indications are that this loss is caused by an excess of oil from the cutting machines getting on the strips making the dirt and dust of the rolling room adhere to them. At the San Francisco mint the allowance on this point is 1 ounce to 24,000; but the above ratio would indicate the necessity of an allowance at our mint of 1 ounce to 13,400.

I do not desire at this time to make any recommendation in the premises, but I deem the matter of sufficient importance to present for your consideration.

Respectfully,

*Joseph W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

April 20, 1906.

Mr. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

Of the 15,027.33 standard ounces of gold clippings received from you on the 16th inst., we treated 670.45 ounces with gasoline and after thoroughly cleaning them they weighed 670.40 ounces, showing a loss of .05 of an ounce, or, at the rate of .074576 loss per thousand ounces; and based on the present amount of coinage (about 270,000 standard ounces, of which approximately forty per cent, or 108,000 ounces are returned in clippings), the loss to our department would be 8.4542 ounces per month. The indications are that this loss is caused by an excess of oil from the cutting machines getting on the strips making the dirt and dust of the rolling room adhere to them. At the San Francisco mint the allowance on this point is 1 ounce to 24,000; but the above ratio would indicate the necessity of an allowance at our mint of 1 ounce to 13,400.

I do not desire at this time to make any recommendation in the premises, but I deem the matter of sufficient importance to present for your consideration.

Respectfully,

*Joseph W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER.  
MELTER AND REFINER'S DEPARTMENT.

Denver, April 18, 1906.

Hon. Frank M. Downer,

Supt. U. S. Mint, Denver, Colo.

Sir:-

Responding to your request of the 14th inst., I have the honor of presenting the following report on the melting furnace equipment furnished by the Rockwell Engineering Co. of New York for the Melter and Refiner's Department, United States Mint, Denver, Colorado:

The melting rooms are equipped as follows: The Refinery melting room with three furnaces to fit No. 60 to No. 80 graphite crucibles; the Ingot melting room with eight furnaces of the same type and size; the Deposit melting room with three small furnaces of a different type, for crucibles from Nos. 14 to 30, and one large size for Nos. 60 to 80 crucibles.

The Refinery melting room is supplied with blast from a No. 3 Sturtevant Blower driven by a 7-1/2 H.P. Bullock motor, capacity of blower 650 cubic feet of air per minute at an average pressure at the burner of 11 ounces.

The Ingot melting room is supplied with air from a No. 5 Sturtevant Blower driven by a 15 H.P. Bullock motor, with an estimated capacity of 750 cubic feet of air per minute, with an average pressure at the burner of 11 ounces.

The Deposit melting room is supplied with air from a No. 4 Sturtevant Blower driven by a 10 H.P. Bullock motor, giving 700 cubic feet of air per minute, with an average pressure of blast of

## MINT OF THE UNITED STATES AT DENVER.

MELTER AND REFINER'S DEPARTMENT,

Downer - 2

11 ounces.

It will be seen from the above that each melting room is independent of the others as to its source of air; however, the Ingot and Deposit melting rooms supply lines are "by passed" so that either fan will supply blast in case of break down.

A close investigation of the long line of pipe from the oil pumps in the basement shows the joints to be absolutely tight, and up to the present time there has been no leakage of oil into the building which would render a disagreeable odor.

The pumping system in the basement consists of two duplex steam pumps of a special design, for heating the oil by exhaust steam, thereby placing the oil at the burners heated to a temperature of 85 degrees F., which facilitates the complete combustion of the oil, thus reducing the amount of carbon deposited in the combustion chamber to a minimum. The pumps are connected to two storage tanks with a capacity of 10,000 gallons each crude oil, so connected as to pump from either, and <sup>so</sup> that while using from one the other can be filled. This furnishes an easy way of ascertaining the quantity of oil consumed.

After using both crude oil and distillate, it has been found that the distillate gives the best results, being a thinner oil, flowing more uniformly in the pipes, and giving a steady supply of oil at the burners, which insures a uniform heat, and very little adjusting of the burners.

The furnaces in the Ingot and Refinery melting rooms are constructed of steel plate and angle iron firmly bolted together, the

MINY OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 3

only cast iron being the top plate. This insures the furnace from danger of cracking, which is so often the case when such a high heat is maintained. The furnaces are lined with best grade of Colorado fire brick; and with the higher heat obtained over gas, the bricks last from two to three months constant use. This is about the same as gas.

The furnaces in the Deposit melting room were originally constructed the same as those referred to in the foregoing paragraph; but being desirous of avoiding the unusual heat that emanated from them, we took off the cast iron top, slides, etc., and re-covered the top of each furnace with a heavy flat fire clay plate, cutting a hole in the center of same about two inches larger, in diameter, than the crucible to be used, placing a fire clay ring 4-1/2" high around said hole, and when in use covering the same with a graphite cover, and retaining the hood used on our old gas furnaces, which has completely eliminated the excessive heat from the exterior of the furnaces. We also reduced the size of the outlet from the furnace into the condensing flue about one-half, which has materially shortened the time of making melts and apparently without endangering the life of the furnace lining, as the opening being so much smaller necessarily reduced the span of the arch over same and correspondingly reduced the strain on said arch, which is the weakest place in the lining.

The wear and tear on the crucible from the high heat (2600 to 2800 degrees F.) is less than in gas furnaces, due principally

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Downer - 4

to the fact that in the latter furnaces of a similar type, the combustion takes place directly against the sides of the crucible, gradually "scaling" the outside, and where the crucible is defective, cutting a hole, thereby causing a broken pot. With the present furnace, the combustion chamber is to the right of the bottom of the pot, so that the force of the combustion is broken by the bricks, and the heat circulates around the crucible before going into the condensing flues. This is noticeable, as our crucibles do not scale until after eight melts. At the present time we are getting from 12 to 15 melts out of a crucible. This means from 60,000 to 70,000 ounces of gold. The melts of both fine and anode gold are made in 25 per cent less time than with gas. During the month of March, 1906, the Refinery melting room melted approximately 500,000 ounces of all kind of gold with a consumption of 2,000 gallons of oil. This figures out \$110 for fuel, or 22¢ per thousand ounces melted. Gas furnaces would figure out about 33¢ per thousand ounces. With the work turned out in this melting room, it would have required 5 gas furnaces, instead of three fuel oil furnaces as now equipped. I am informed that the results obtained here are much better than results obtained elsewhere where comparative tests have been run.

The work of the Ingot melting room is noticeable from the point of cost and losses of metal. The production for February and March was 277,445.41 standard ounces of gold and 208,715.09 silver. The amount of oil consumed was approximately 2450 gallons, at a

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

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cost of \$134.75, which is less than 28¢ per thousand ounces melted; and the apparent loss in the melting room in gold .25 ounces per 1,000 ounces, and silver .17 per 1,000 ounces. In view of the fact that the sweeps and flue dust are yet to be taken into account it would indicate that the amount of copper added for oxidation would nearly offset our loss in melting.

The results in the Deposit melting room are even more flattering. Five melts are now made where only three could be made with gas. The consumption of gas in December and January averaged \$84.00. The present consumption of oil is thirty gallons per day or \$43.00 per month. This shows a saving of nearly 50%. The melts are made in about three-fifths the time formerly taken.

It is our opinion that a quick high heat is to be desired; the less time the metal is exposed to a melting heat the smaller volatilization loss. A longer heat required to get a sufficiently high temperature for proper mixture before pouring will cause a higher loss than a short heat from 200 to 300 degrees F. in excess of the pouring temperature, which are about the results as obtained with the present equipment.

Another feature of the present equipment which should not be lost sight of, is the cost of repairing as compared to gas furnaces. The iron nozzles of the gas burners burn off and have to be replaced which means dismantling the furnace to replace them; also the brick linings are more expensive and difficult to repair. In the case of fuel oil, the only part of the furnace which

## MINT OF THE UNITED STATES AT DENVER,

## MELTER AND REFINER'S DEPARTMENT.

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is perishable is the fire brick nozzle which is lined with carborundum. This is easily replaced from the inside of the combustion chamber; while the lining of the furnace consists, with one exception, of 9 inch fire brick, and the furnace can be repaired in a very short time without removing any of the parts.

The only possible objection to any of said Rockwell furnaces, that I know of, is the unusual heat emanating from those in the Refinery melting room, where the temperature is very high and distressing to the men, but that is caused, probably, by local conditions, as the same objection cannot have any application to the furnaces in the Deposit melting room, and very little, if any, to the furnaces in the Ingot melting room.

I have hereinbefore stated how we overcome the excessive heat in the Deposit melting room by changing the top of the furnaces, etc., but I will add that, in that room, situated in the basement of the building, we have a splendid flue and plenty of ventilation; in the Ingot melting room, on the main floor of the building, we also have a fine flue, and the room being large with ventilation from two sides dissipates the heat to such an extent that it is not especially noticeable; but, in the Refinery melting room, which is very small, with two windows only and both on the same side, and just one story intervening between it and the roof, the flue is short, the draft comparatively weak and the furnace connections with it has so many angles that material changes should and no doubt will be made in the near future, by which we will remove the above and only objection existing at this time.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 7

In conclusion, and after careful deliberation, I now state that our equipment is entirely satisfactory. Of course, it is not expected that the furnaces are perfection, or that we shall ever attain that degree in a melting furnace. There are times when there is trouble, but by maintaining a uniform pressure of air, a constant and steady flow of oil to the burners with the oil heated to a uniform temperature when it reaches the burners, the furnace men will have little trouble in getting the results desired for good clean work.

Respectfully submitted,

*Joel Wilson*  
Melter and Refiner.

U. S. MINT SERVICE.  
Form No. 212.  
Ed. 6-27-1905. 5 x 10 1/2.

MELTER AND REFINERS OF BULLION BALANCES.

Mint of the United States at Denver, Colorado.  
Gold and Silver Bullion Balances in the Melter and Refiners hands and Receipts from and Deliveries to the  
Superintendent of the Mint by him during the month of April, 1906.  
GOLD.

Received	STANDARD OUNCES.			Delivered	STANDARD OUNCES.		
	Balance						
Balance	April 1,	645	321	Ingots	455	984	290
Contained in Gold Deposits		94	734	Bars, Fine			
Contained in Silver Deposits				Bars, Standard			
Contained in				Bars, Unperfected			
Circlings, blanks, etc.		209	649	Bars			
			950	Sweepings			
		949	706	Balance	April 30,	493	722
			685		1906.	395	
						949	706
							685

SILVER.

Received	STANDARD OUNCES.			Delivered	STANDARD OUNCES.		
	Balance						
Balance	April 1,	75	364	Ingots	23	410	00
Contained in Gold Deposits		5	212	Bars, Fine			
Contained in Silver Deposits			2	Bars, Standard			
Contained in			54	Bars, Unperfected			
Circlings, blanks, etc.		16	506	Bars			
Amount Silver in		11	944	Sweepings			
			80	Balance	April 30,	85	620
		109	030		1906.	14	
			14			109	030
							14

CONTACT: May 1st 1906. Superintendent.

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MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Denver, May 1, 1906.

Ho<sup>r</sup> A. Frank M. Downer,  
Supt. U. S. Mint, Denver, Colo.

Sir:-

Responding to your request of the 14th ult., I have the honor of presenting the following report on the melting furnace equipment furnished by the Lockwell Engineering Co. of New York for the Melter and Refiner's Department, United States Mint, Denver, Colorado:

The melting rooms are equipped as follows: The Refinery melting room with three furnaces to use No. 60 to No. 80 graphite crucibles; the Ingot melting room with eight furnaces of the same type and size; the Deposit melting room with three small furnaces of a different type, for crucibles from Nos. 14 to 30, and one large size for Nos. 60 to 80 crucibles.

The Refinery melting room is supplied with blast from a No. 3 Sturtevant Blower driven by a 7-1/2 H.P. Bullock motor, capacity of blower 650 cubic feet of air per minute at an average pressure at the burner of 11 ounces.

The Ingot melting room is supplied with air from a No. 5 Sturtevant Blower driven by a 15 H.P. Bullock motor, with an estimated capacity of 750 cubic feet of air per minute, with an average pressure at the burner of 11 ounces.

The Deposit melting room is supplied with air from a No. 4 Sturtevant Blower driven by a 10 H.P. Bullock motor, giving 700

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Downer - 2

cubic feet of air per minute, with an average pressure of blast of 11 ounces.

It will be seen from the above that each melting room is independent of the others as to its source of air; however, the Ingot and Deposit melting rooms supply lines are "by passed" so that either fan will supply blast in case of break down.

A close investigation of the long line of pipe from the oil pumps in the basement shows the joints to be absolutely tight, and up to the present time there has been no leakage of oil into the building which would render a disagreeable odor.

The pumping system in the basement consists of two duplex steam pumps of a special design, for heating the oil by exhaust steam, thereby placing the oil at the burners heated to a temperature of 85 degrees F., which facilitates the complete combustion of the oil, thus reducing the amount of carbon deposited in the combustion chamber to a minimum. The pumps are connected to two storage tanks with a capacity of 10,000<sup>gallons</sup> each, crude oil, so connected as to pump from either, and so that while using from one the other can be filled.

After using 2800 gallons of Florence, Colorado, crude oil, we tried the distillate for fuel purposes. The crude oil at times seemed to choke the burner nozzle so that it would not flow freely, and in the Ingot melting room on cold days it was necessary to frequently tap the oil supply pipe close to the nozzle to get up a sufficient heat to do our work. The distillate, however,

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 3

which we have since used, gives much better results, because it is a thin oil, flows freely, and gives a steady supply of fuel at the furnaces, which insures a more uniform heat and with less adjustment of the burners. We have no meter connections to determine the consumption of fuel, but on the 25th of April we made a careful test of furnace use and amount consumed, and on the 26th we repeated the test, and after careful computation it is our opinion that the No. 80 furnace consumes not to exceed five gallons of distillate per hour, and the No. 20 furnace (deposit melting room) not to exceed four gallons per hour.

The furnaces in the Ingot and Refinery melting rooms are constructed of steel plates and angle irons firmly bolted together, the only cast iron being the top plate; they are lined with the best grade of Colorado fire brick, and with the high heat obtained the lining lasts approximately two months.

The large furnace in the Deposit melting room was originally constructed the same as, and the small ones similar to, those described in the foregoing paragraph; but, in experimenting for the purpose of getting rid of the unusual heat that emanated from them, we took off the cast iron top, slides, etc., and re-covered each furnace with a heavy fire clay plate, cutting a hole in the center of same about two inches larger, in diameter, than the crucible to be used, placing a fire clay ring 4-1/2" high around the hole, and retaining the hood used on our old gas furnaces, which change has materially lessened the heat from the exterior

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 4

of the furnaces. We also reduced the size of the outlet from the furnace into the condensing flue about one-half, which shortened the time of making melts and apparently without endangering the life of the furnace lining, as the opening being so much smaller necessarily reduced the span of the arch over same and correspondingly reduced the strain on the arch, which is the weakest place in the lining.

The wear and tear on the crucible from the high heat (2400 to 2800 degrees F.) is not very great, due principally to the fact that the combustion chamber is to the right of the bottom of the pot, so that the force of the combustion is broken by the bricks, and the heat circulates around the crucible before going into the condensing flues.

At the present time we are getting from ten to fifteen melts out of each crucible; in the Refinery melting room to bring down a melt of fine gold (made from cathodes which must be fed into the furnace slowly from time to time) ready for dipping, requires about ninety minutes for 7200 ounces of metal; while a 6000 ounce gold anode melt (made from deposit bars) can be melted down in forty-five minutes. The time consumed in making melts in the Ingot melting room varies according to the material used; in using fine gold with the proper alloy, the time consumed in melting down, say, 6000 ounces to the dipping point, is approximately 75 minutes; in using about one-third of the same kind of charge and the balance clippings, the time consumed is about 90 minutes, and in a melt of

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 5

all clippings, the time consumed would be about one and three-quarters hours; said clippings are always quite hard, because the strips rolled from the ingots we are furnishing are never annealed. The results obtained in the Deposit melting room, due largely to the changes made in the furnaces, are better than in any other department; 1000<sup>ounce</sup> melts are poured in from 15 to 18 minutes, and, generally speaking, the melts are made in about three-fifths the time formerly consumed.

The only part of the furnace, other than the lining, which is perishable, is the fire brick nozzle which is lined with carborundum, and when burned out it can be easily replaced from the inside of the combustion chamber; the lining of the furnace consists principally of 9 inch fire brick, and it can be repaired in a reasonable time without removing any of the parts.

The only objection to any of said Rockwell furnaces, that I know of, is the unusual heat emanating from those in the Refinery melting room, where the temperature is very high and distressing to the men, but that is caused, partly at least, by local conditions, as the same objection can have little, if any, application to the furnaces in the Deposit melting room, and not very much to the furnaces in the Ingot melting room.

I have hereinbefore stated how we reduced the excessive heat in the Deposit melting room by changing the furnaces, but I will add that, in that room, situated in the basement of the building, we have a splendid flue and plenty of ventilation; in the Ingot

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Downer - 6

melting room, on the main floor of the building, we also have fine flues, and the room being large with ventilation from two sides, the heat is dissipated to such an extent that it is not especially noticeable at the furnaces, although it is quite warm in the visitor's gallery. But, in the Refinery melting room, which is very small, with two windows only, and both on the same side, and just one story intervening between it and the roof, the flue is short, the draft comparatively weak and the furnace connections with it have so many angles, that material changes should, and no doubt will be, made in the near future, by which we hope to better the conditions in that room.

In conclusion, and after careful consideration of the entire subject, I now state that our furnace equipment is quite satisfactory; but it is not claimed that the furnaces are perfection; there are times when we have trouble, but by taking due precautions, the furnace men will have little inconvenience in getting the results desired for good and expeditious work.

Respectfully submitted, .

*John W. Wilson*  
Melter and Refiner.



MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, May 2, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor to recommend Alexander Webster for the position of helper in the Refinery at a salary of \$3.25 per day. I recommend that his appointment be made to take effect on the 8th inst.

Respectfully,

*J. J. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, May 3, 1906.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor to recommend Burt H. Taggart for the position of helper in the Refinery at a salary of \$3.25 per day. I suggest that his appointment be made immediately, to take effect upon his executing the oath of office.

Respectfully,

*J. W. Nilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

May 3, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

On the 6th day of last February, I had the honor of calling your attention to the necessity of providing for the Melter and Refiner's office a light safe in which to keep record books, files, etc. Under date of February 12th, the supervising architect communicated with you regarding said safe with an inclosure numbered 7082, and the same was referred to this department, and fully answered on February 17th, since which time we have not had any information regarding the matter. Will you kindly advise us as to the present status of the case?

Respectfully,

*J. W. Milson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

May 5, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of recommending Samuel R. Whitaker for the position of helper in the Refinery at a salary of \$3.25 per day. I suggest that his appointment be made to take effect upon the 7th inst.

Respectfully,

*Frederic Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, May 5, 1906.

Mr. Wm. N. Daidis,  
316 W. First Ave.,  
City.

Sir :-

I notice that your name is on the list of eligibles for the position of helper in the mint service; and while I do not know when your services may be needed, if at all, yet, if convenient, I would like to have you drop in to my office on Monday next that I may discuss with you your qualifications for said position.

Respectfully,

*J. W. Milson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

May 19, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of requesting bonds in the sum of \$5,000  
each for the following named employes in this department:

Denver Chaffee, assistant melter; Burt H. Taggart, refinery  
helper; Sam R. Whitaker, refinery helper.

Respectfully,

*Joe W. Nilsson*  
Melter and Refiner.

U. S. MINT SERVICE.  
Form No. 23.  
Est. & 10 1893 500 - 4 x 10 1/2

MELTER AND REFINERS OF BULLION BALANCES.

Mint of the United States at *Denver, Colo.*

Gold and Silver Bullion Balances in the Melter and Refiners hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the *month of May*, 18*96*

GOLD.

Received	STANDARD OUNCES.			Delivered	STANDARD OUNCES.		
	Balance		19 <i>06</i>				19 <i>06</i>
Contained in Gold Deposits	<i>May 1,</i>	400	722	Ingot		694	045
Contained in Silver Deposits		107	600	Bars, Fine			510
Contained in				Bars, Standard			
Clippings, blanks, etc.		237	971	Bars, Unperfected			
			900	Bars			
				Sweeps			
				Balance <i>May 31</i>		1116	249
						1810	294

SILVER.

Received	STANDARD OUNCES.			Delivered	STANDARD OUNCES.		
	Balance		19 <i>06</i>				19 <i>06</i>
Contained in Gold Deposits	<i>May 1,</i>	85	620	Ingot		16590	00
Contained in Silver Deposits		72	432	Bars, Fine			
Contained in				Bars, Standard			
Clippings, blanks, etc.		609	680	Bars, Unperfected			
				Bars			
				Sweeps			
				Balance <i>May 31,</i>		147	556
						164	147

*Frederic W. Brown*  
Superintendent  
*June 1896*  
*Securities*  
Melter and Refiner

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

June 12, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of calling your attention to the services of Jacob R. Boyle, Foreman of the Refinery Melting room; since his transfer to this institution, he has been a model employe, careful, competent, and sincerely desirous of accomplishing the greatest possible amount of work. The Refinery melting room, as you know, has been a difficult place to work in, on account of the excessive heat, and the large amount of melting necessary; however, Mr. Boyle did not falter for an instant, but unostentatiously pursuing the even tenor of his way accomplished what had appeared to be almost impossible in the way of getting through with the immense amount of work that was necessary.

In consideration of the foregoing, and the additional fact that no other person in the Melter and Refiner's department who is in charge of an operating room receives less than the amount hereinafter designated, I most earnestly recommend that his compensation be fixed at five dollars per day from and after the first day of July next; being an increase of 50 cents per day.

Very respectfully,

*Joe W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

June 12, 1906.

Mr. Jos. W. Milson,  
Melter and Refiner,  
U. S. Mint, Denver, Colo.

Sir:-

In view of the large amount of work done in the Refinery, and the fact that the foreman is very often required to be out of the room, both receiving and delivering gold, I recommend that the Refinery melting room be separated from the Refinery proper, and be placed in charge of Mr. J. R. Boyle, at a compensation of \$5.00 per day, his force to consist of two assistant melters and a helper.

I further recommend that Mr. H. D. Bartlett be made assistant foreman of the Refinery at a compensation of \$4.50 per day. In view of this recommendation, it will be necessary to detail another man on the gold cells to assist Bartlett. In order that the Refinery may be kept clean, the sweepings promptly burnt up, sweats made, and that the general appearance of the Refinery will indicate careful and clean work, the foregoing recommendations are necessary in my opinion.

Respectfully,

*Frank L. Whithead,*

Assistant Melter and Refiner.

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MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

June 13, 1906.

Hon. Frank M. Downer,  
Superintendent,

U. S. Mint, Denver, Colo.

Sir:-

Under date of April 13, 1906, I had the honor of calling your attention to the necessity of enlarging the Refinery melting room. After two months delay on the part of the Coiner, I now have before me his answer to said communication; and in reply thereto, I have the honor of presenting the following statement:

that  
I admit, the proximity of the melting room to the adjusting room adds somewhat to the heat in the latter, but that it "has proven deleterious to the health of the force generally", - doubt; in fact, I believe that that statement is entirely sophistical, and a careful inspection of the adjusting room force will certainly sustain my belief, as they are a remarkably fine and healthy looking lot of ladies; and it appears to me almost slanderous to suggest anything to the contrary.

As to the matter of prostrations from the "excessive heat", I have very little information, but such as I have I desire to record, to wit: Sometime after my first communication with reference to this matter, I was coming out of the Refinery and met the Coiner in the hall outside of the Refinery door, and he handed me a thermometer, saying insubstance, "Here is Wirth's thermometer; I found

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 2

it hanging in the adjusting room. He hadn't ought to do that." I fully agreed with him, and stated that such action was contrary to my wishes and should not occur again. If you remember, about that time you came up and engaged in conversation with the Coiner and myself in the hall, and we noticed one of the ladies from the adjusting room sitting by the open window at the end of the hall, and the Coiner remarked that that was the third prostration that day from the heat. Afterwards, in discussing the matter with Mr. Wirth, he stated that the thermometer was taken into the adjusting room with the consent of the forewoman and hung about six feet from the floor over the seat of the adjuster that sat closest to the so-called hot partition; that he went in and looked at it about 30 minutes later and that it registered 88 degrees F. As to the statement of the Coiner that "said partition of the room was a grievous error," I beg to submit that the grievous error consisted in his opposition to the partition running all the way across, as that would have enabled us to so adjust our ventilation that the melting room heat would have been greatly reduced, and, of course, it would have been correspondingly cooler in the adjusting room.

As to the statement that said partition is "so intensely hot as to admit of one's hand being only momentarily possible to be laid thereon," and the watchmen's alleged statement that "this high condition continued throughout the night," I can only say that I have at no time found said partition as hot as said allegation; and as to the watchmen's statements, it is impossible for them to

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MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Downer - 3

be literally true, and further I cannot say as I have not discussed the matter with them.

As to the statement regarding "the insufficiency of the air space with 30 people now in the room," note this: the office that I am doing this writing in (the office of the Melter and Refiner) has 18 per cent less cubic feet of air space per capita than the adjusting room with its full force present, and only a partition separates this office from the Ingot melting room; and, further, after we extend our Refinery melting room partition to the east wall of the adjusting room, the adjusting room will still have a greater air space per capita than this office.

I agree fully with the Coiner that "we should all be equally solicitous for the health and ordinary comfort of the ladies employed here,"--but I would also include the men in the statement; and it would appear that this is only fair when I state that the heat in the refinery melting room (taken with the same thermometer hereinbefore referred to) registers constantly from 120 to 160 degrees F.--in fact it registers the former at the present moment, and the furnaces have been closed down for at least an hour. And please remember that the limit of our refinery capacity is the limit set by the Refinery melting room; and all the overtime in connection with the Refinery during our rush last month was in said melting room.

As to the Coiner's request "that the partition be at once removed and the adjusting room restored to its original dimensions,"

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Downer - 4

and his statement that to do so "will work no hardship upon the Melter and Refiner's department, which can comfortably do the refinery melting in the large and well ventilated melting room, with a surplus of furnaces, as originally intended," I must confess I am very much surprised--not at the request (for I have known the Coiner for many years)--but as to the said statement that follows it; because it is the first opinion I have had from the Coiner as to how to comfortably do the refinery melting "as originally intended." The superintendent of machinery, who was in charge of the equipment of this institution, when interrogated by me as to a Refinery melting room, stated that it was the intention to put it in the east end of the present main refinery room, but the equipment of said room absolutely prevented that action, and it had to be placed elsewhere. Later, when my assistant arrived, he informed me to the same effect; and that statement of the Coiner's--in substance that it was originally intended to do the refinery melting in the Ingot melting room--is the first intimation of the kind that I have ever had from any source. At settlement, the regulations require a full and accurate statement from the Melter and Refiner of the business of his department during the year; and if the ingot and refinery melting should be attempted in the same room, and necessarily through the same flues, it would of course cause such a commingling of the melting room sweeps and as well the flue and condenser sweeps, as to render it utterly impossible to differentiate between them, thus rendering absolutely worthless any efforts

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RECEIVED BY THE MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Downer - 5

to determine accurately the work of the respective departments. Certainly, even if this were permissible, it is far from being advisable, as it would cause endless trouble and dissension between the two departments over the question of loss and gain in their respective operations. The Coiner's reference to surplus furnaces is so wholly uncalled for as to be almost amusing: We have eight furnaces in the Ingot melting room--four on each side--and we use one side for gold and the other for silver and sweats; and considering relinings and repairs of the furnaces, it would certainly be far from economical to attempt to operate the ingot melting room with a less number than we now have. So the question of doing the refinery melting in that room is entirely out of consideration, and it is only necessary therefore to refer very briefly to the Coiner's statement that it is just as convenient for us to take our gold down to the melting room as it is for him to take his up to the whitening and adjusting rooms. Now as to that: It would probably be better for the Coiner's department if all his operations were on the same floor of the building, but it is unfair to say it is just as convenient for us to move our gold up and down as for him, because his gold consists exclusively of metallic blanks carried in small and convenient covered boxes, while our refinery product is in many forms, such as bars, tops, slimes (dry powder form), cathodes, etc., and all of it, except the bars, must be conveyed in open porcelain or earthenware filters, which are cumbersome, heavy, and very brittle, and the risk of transportation by

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MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 6

elevators and trucks over rough places (particularly in and out of the elevators) would be very great, certainly much greater than I would willingly assume.

Presuming that I have covered briefly the Coiner's answer to my former communication, I now desire to present the remedy; and that is the granting of my request of April 13th. And, speaking of it as a remedy, I know you will pardon a few more lines by way of explanation. If a new partition is run all the way across the adjusting room, leaving an open air space of a few inches between it and the one now in use, it will almost preclude any heat from passing into the adjusting room from the furnaces; and if it should be arranged to use a fan in connection with said air space it is my opinion that the remedy will be perfect for the conditions complained of by the Coiner.

In conclusion, I fully agree with the Coiner that this matter is of pressing importance, and I trust the new partition may be immediately erected, so that when we resume operations after settlement, it will be under conditions much more favorable and satisfactory, both <sup>to</sup> the Coiner and myself.

Very respectfully,

*Frederick M. ...*  
Melter and Refiner.

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MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

June 15, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I return herewith "Bill of Lading" So. Pacific Co. to Clendenin Bros., Baltimore for ten (10) casks copper, shippers' weight 10,370 lbs, consignee U. S. Mint, Denver, Colo. Said casks were received on the 12th inst., and when the said bill of lading came to this department it was marked "Heads out of three (3) barrels when delivered"; and upon investigation I found the gross weight to be 8985 lbs., and the net weight of copper 8648 lbs., being a shortage of 1352 lbs. I therefore also return herewith for correction the bill in triplicate, of James Clendenin for \$2100.00 for payment of said copper.

Respectfully,

*Joseph Wilson*  
Melter and Refiner.

U. S. MINT SERVICE  
Form No. 219.  
Ed. Feb. 1906-300-8 x 10 1/2

MELTERS AND REFINERS OF BULLION BALANCES.

Print of the United States at

*Denver, Colo.*

Gold and Silver Bullion Balances in the Melted and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of *June*, 190*6*.

GOLD.

Received  
Balance  
Contained in Gold Deposits  
Contained in Silver Deposits  
Contained in  
Clippings, blanks, etc.

STANDARD OUNCES.			
1906	1116	249	158
	86	486	863
	63	311	950
	1266	1179	51

Delivered  
Ingots  
Bars, Fine  
Bars, Standard  
Bars, Unparted  
Bars  
Sweeps

Balance  
*June 30*

STANDARD OUNCES.			
1906	1107	123	861
	1266	117	751

SILVER.

Received  
Balance  
Contained in Gold Deposits  
Contained in Silver Deposits  
Contained in  
Clippings, blanks, etc.

STANDARD OUNCES.			
1906	149	556	74
	3	988	43
	2327	00	
	153	872	20

Delivered  
Ingots  
Bars, Fine  
Bars, Standard  
Bars, Unparted  
Bars  
Sweeps

Balance  
*June 30*

STANDARD OUNCES.			
1906	145	201	70
	153	672	20

CORRECT:

Specimen Statement.

*June 30 1906*

*John W. Mendenhall*

Melter and Refiner

MELTERS AND REFINERS OF BULLION BALANCES.

Print of the United States at

*Alameda, Cal.*

Gold and Silver Bullion Balances in the Melted and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of *June*, 190*1*.

GOLD.

Received  
Balance  
*June 1,*  
Contained in Gold Deposits  
Contained in Silver Deposits  
Contained in  
Clippings, blanks, etc.

STANDARD OUNCES.	
1006	1116 249 197
	86 486 863
	63 381 930
1906	1266 117 981

Delivered  
Ingots  
Bars, Fine  
Bars, Standard  
Bars, Unparted  
Bars  
Sweeps

Balance  
*June 30,*

STANDARD OUNCES.	
1906	158 904 120
	1167 163 861
1906	1266 117 981

SILVER.

Received  
Balance  
*June 1,*  
Contained in Gold Deposits  
Contained in Silver Deposits  
Contained in  
Clippings, blanks, etc.

STANDARD OUNCES.	
1906	147 556 72
	3 988 43
	2 327 05
1906	153 872 20

Delivered  
Ingots  
Bars, Fine  
Bars, Standard  
Bars, Unparted  
Bars  
Sweeps

Balance  
*June 30,*

STANDARD OUNCES.	
1906	8 670 50
1906	145 201 70
1906	153 872 20

CORRECT:

Superintendent.

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*William*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

July 2, 1906.

GOLD ACCOUNT.

The Melter and Refiner received during the fiscal year ending June 30th, 1906, gold bullion, standard ounces, as follows:

Deposits	2,113,736.341	
Clippings	<u>568,688.140</u>	2,682,424.481
He delivered prior to settlement in ingots	<u>1,575,260.220</u>	
To Balance		1,107,163.831

He delivered in settlement:

Crude gold deposits	1,025,865.480	
Refinery Settlement		
gold bars	72,972.625	
Experimental bars	3,549.086	
Refinery Settlement		
silver bars	4,568.455	
Refinery Settlement		
base bars	225.276	
Fine Gold	15.351	
Sweeps (298 sacks)	<u>132.047</u>	<u>1,107,310.332</u>
Excess		104.461

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

July 2, 1906.

SILVER ACCOUNT.

The Melter and Refiner received during the fiscal year ending June 30th, 1906, silver bullion, standard ounces, as follows:

Contained in Gold deposits	133,978.77	
Clippings	104,913.55	
Transfer from Philadelphia		
mint	11,232.66	
Uncurrent coin	<u>142,703.82</u>	392,828.80
He delivered prior to settlement in ingots		<u>247,627.10</u>
To Balance		145,201.70

He delivered in settlement:

Contained in gold deposit		
bars	115,792.30	
Refinery settlement gold		
bars	2,298.73	
Experimental bars	757.94	
Refinery settlement silver		
bars	27,855.02	
Assays	<u>909.10</u>	<u>147,613.69</u>
		2,431.89

EX-9138

U. S. MINT SERVICE  
Form No. 319.  
Ed. Feb. 3-08-50. 8 x 10 1/2.

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at

*Denver, Colo.*

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of June, 1906.

GOLD.

Received	STANDARD OUNCE.			Delivered	STANDARD OUNCE.		
	Balance			Ingots			
Contained in Gold Deposits				Bars, Fine			
Contained in Silver Deposits				Bars, Standard			
Contained in				Bars, Unparted			
Chippings, blanks, etc.				Bars			
<i>Settlements duplicate</i>				Sweepings			
190 <u>6</u>	1	116	209	158	158	984	120
	86	444	863				
	63	341	420		132	449	
	164	461					
Balance June 30	1	266	282	442	1	107	196
					1266	282	442

SILVER.

Received	STANDARD OUNCE.			Delivered	STANDARD OUNCE.		
	Balance			Ingots			
Contained in Gold Deposits				Bars, Fine			
Contained in Silver Deposits				Bars, Standard			
Contained in				Bars, Unparted			
Chippings, blanks, etc.				Bars			
<i>Settlements duplicate</i>				Sweepings			
190 <u>6</u>	147	456	72	8670	50		
	3	488	43				
	2	327	05		866	23	
	2	369	02				
Balance June 30	1	56	241	22	146	704	49
					156	241	22

CORRECT:

*Superintendent.*

June 30 1906

*Geo. M. Wilson*  
Melter and Refiner

THE MINT OF THE UNITED STATES AT DENVER.

OFFICE OF THE MELTER & REFINER,

July 6, 1906.

Hon. Frank M. Downer,

Supt. U. S. Mint, Denver.

Sir:-

I have the honor to report that I have carefully considered the bids on graphite supplies for the current fiscal year and find as follows:

That there are only three bidders; that the Denver Fire Clay Co. is the lowest bidder on 8 articles out of 14; that the Taunton Crucible Co. is the lowest bidder on 3 articles out of 14; that The Robert J. Taylor, Incorporated, is the lowest bidder on 2 articles out of 14; that on one article- No. 2 dipping cups- the latter is the highest bidder, the other two being the same; that the total of each bid, based upon the estimates as specified for the year are:

The Denver Fire Clay Co.	\$3191.25
The Taunton Crucible Co.	3461.25
The Robert J. Taylor, Incorp.	3566.00

I attach hereto a tabulation of said bids showing in full detail the foregoing facts;

The proposal of the Taunton Crucible Co. contains a statement as follows: 'as all the graphite articles wanted are of Dixon's Specials, it is impossible to submit samples, and this proposal must be accepted in whole not in part, if accepted at all. Bulk of shipment to be in usual car lot shipments with due notice'.

The fact is that the name 'Dixon' was entirely eliminated from the supplemental call for bids submitted to the bidders.

-2-

and the 'specials' required were specified in detail by blue prints; and the Fire Clay Co. did not make any supplemental bid but allowed its original bid to stand as its final proposal in the matter; and neither of the new bidders have submitted any samples whatever.

In view of the fact that The Taunton Crucible Co. will not accept a contract for anything less than the whole, and that as a whole its bid is \$270.00 more than the Denver Fire Clay Co. it seems unnecessary to consider its bid further. As to the Robert J. Taylor, Incorporated, it is below the Denver Fire Clay Co. on only 4 articles out of the 14, and in the aggregate its bid is \$374.75 greater than the proposal of the Fire Clay Co.- it therefore seems to affirmatively appear that the lowest and best bid is that of the Denver Fire Clay Co.- and in view of the further fact that we know the quality of its graphite goods to be first class, while no samples of any others have been submitted for our inspection as required by the call, I recommend that the proposal of said The Denver Fire Clay Co. be accepted and that it be required to enter into contract and bond accordingly.

As it is necessary for us to procure many of these goods as soon as possible, I earnestly recommend that action be had immediately.

Respectfully submitted,

*John W. Wilson*  
Melter & Refiner.

# PROPOSALS TO FURNISH GRAPHITE GOODS.

Articles No.		as Desired Description	Price each	Amount	Denver Fire Clay Co.	Price each	Amount	Taunton Cru- cible Co.	Price each	Amount	Rebt. J. Taylor Incorporated	Price each	amount
300		Crucibles											
50		Mint Special	4.60	1380.00		4.50	1350.00		5.25	1575.00			
400		Crucibles No.30	2.10	105.00		1.75	87.50		1.95	97.50			
		" No.20											
		(S.E.)	1.50	600.00		1.20	480.00		1.30	520.00			
400		" No.14	.84	336.00		.95	380.00		.91	364.00			
20		Crucible covers											
		No.90	1.57 1/2	31.50		1.50	30.00		1.35	27.00			
100		Crucible covers											
		No. 70 Spc.	1.20	120.00		1.50	150.00		1.05	105.00			
125		Crucible											
		rings No.4"	1.00	125.00		2.25	281.25		1.05	131.25			
75		Crucible											
		rings 2"	.70	52.50		1.75	131.25		1.05	78.75			
50		Special gold											
		stirrers	1.50	75.00		3.00	150.00		1.75	87.50			
500		14 1/2" " "	.45	22.50		.60	30.00		.75	37.50			
400		8 1/2" " "	.35	140.00		.40	160.00		.75	300.00			
125		Dipping cups #2	.50	62.50		.50	62.50		.60	75.00			
250		" " 3	.50	125.00		.60	150.00		.60	150.00			
25		" " 5	.65	16.25		.75	18.75		.70	17.50			
					3191.25			3461.25			3566.00		

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

July 10, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of suggesting that, before presenting for your consideration the question of increasing the equipment of the Refinery Melting Room, I would like to obtain the size of the new equipment as well as the cost, so that we may intelligently consider the subject from the standpoint of available space as well as available means to purchase. To that end, I respectfully recommend that propositions be obtained for installing complete, fully tested, and ready for use, the following equipment:

One Reverberatory cupelling oil furnace for melting and refining copper,--an iron shell with fire brick side lining with bottom of magnesia brick, and capacity of 1,000 lbs. of copper.

Also, one Rockwell oil furnace, No. 2921, same as recently installed by the Rockwell Engineering Co. in said melting room.

Very respectfully,

*James Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

July 2, 1906.

Gold Account.

The Melter and Refiner received during the fiscal year ending June 30th, 1906, gold bullion, standard ounces, as follows:

Deposits	2,113,736.341	
Clippings	<u>568,688.140</u>	2,682,424.481
He delivered prior to settlement in ingots		<u>1,575,283.820</u>
To Balance		1,107,140.661

He delivered in settlement:

Crude gold deposits	1,025,366.480	
Refinery Settlement gold bars	72,972.625	
Experimental bars	3,549.088	
Refinery Settlement silver bars	4,568.455	
Refinery Settlement base bars	225.276	
Fine Gold	15.351	
Sweeps (298 sacks)	<u>132.047</u>	<u>1,107,322.81</u>
Excess		165.851

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

July 2, 1906.

Silver Account.

The Melter and Refiner received during the fiscal year ending June 30th, 1906, silver bullion, standard ounces, as follows:

Contained in Gold deposits	133,978.77	
Clippings	104,913.55	
Transfer from Philadelphia mint	11,232.66	
Uncurrent coin	<u>142,703.82</u>	392,828.80
So delivered prior to settlement in ingots		<u>247,627.10</u>
To Balance		145,201.70

So delivered in Settlement:

Contained in gold deposit bars	115,792.80	
Refinery Settlement gold bars	2,298.73	
Experimental bars	808.98	
Refinery Settlement silver bars	27,855.02	
Sweeps	<u>866.23</u>	147,570.72 <sup>621.70</sup>
Excess		2,420.06

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

July 14, 1906.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of transmitting herewith the annual report of the operations of the department of the Melter and Refiner of the United States Mint at Denver, Colorado, for the fiscal year ended June 30, 1906.

Very respectfully,

*J. C. Wilson*  
Melter and Refiner.

## MINT OF THE UNITED STATES AT DENVER.

## MELTER AND REFINER'S DEPARTMENT.

Joseph W. Milsom, Melter and Refiner.

\*\*\*\*\*

The Melter and Refiner received from the Superintendent during the fiscal year ended June 30th, 1906:

	Standard ounces	Standard ounces
Bullion containing gold	:	2,682,424.481
Returned in ingots prior to settlement	1,575,260.620	:
Returned in bars at settlement	1,107,329.322	2,682,589.942
Surplus in gold recovered		165.461
Bullion containing silver	:	392,828.80
Returned in ingots prior to settlement	247,627.10	:
Returned in bars at settlement	147,621.76	395,248.86
Surplus in silver recovered		2,420.06

The surplus, as well as the additional amount necessary to cover actual operating losses, was recovered from unreported fractions of assay, from fractional gains in weight of gold deposits, and from the difference between standard and actual fineness of ingots delivered.

The following melts were made:

Metal	Anodes	Deposits	Mint bars	Ingots	Special	Totals
Gold	198	4512	151	270	27	5158
Silver	8	54	1	69	12	144
	206	4566	152	339	39	5302

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

-2-

During the year two gold ingot melts were condemned because they were not homogeneous. No silver ingot melts were condemned.

298 sacks of sweeps were gathered during the year, containing by assay 132.047 standard ounces of gold and 866.23 standard ounces of silver.

-----  
Refinery operations were as follows:

	Gold Standard ounces	:	Silver Standard ounces
Delivered to the Refinery bullion containing	1,085,732.899	:	28,480.94
Returned in fine bars	1,007,810.231	:	2,666.44
Returned in settlement bars	77,900.057	:	27,501.91
Returned in sweeps	87.163	:	772.95
Surplus recovered in Refinery	64.552	:	2,460.36

The average fineness of the fine gold returned from the Refinery during the year was 0.99985; and, in the last operating month, May, there were produced 361,534.34 ounces of fine gold of an average fineness of 0.9999 plus.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

-3-

Receipts and Expenditures of the Refinery:

<hr/>		
Receipts: Charges collected for parting	\$16,841.12	
Surplus bullion recovered	<u>2,677.18</u>	\$19,518.30
<hr/>		
Expenditures: Wages	\$6,702.58	
Supplies	2,140.64	
Electricity	1,454.27	
Acids	767.76	
Fuel oil	441.96	
Repairs	<u>244.28</u>	11,751.49
<hr/>		
Excess of receipts over expenditures in Refinery		\$7,766.81
<hr/>		

Deducting the Refinery surplus from the expenses of operating the Refinery and we have a net cost to the government of 0.8955 of a cent per standard ounce of gold produced in the Refinery.

A number of new ideas have been introduced in connection with the electrolytic process of gold refining:

We now make the gold chloride to replenish the electrolyte in the gold cells, without the assistance of nitric acid, and in a very economical and expeditious manner.

We use a new anode mould which reduces the amount of scrap produced in the gold cells about one-half.

By the use of a special form of hard rubber baskets, we now treat our gold cell tops and slimes, as well as the gold anodes

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

-4-

from the silver cells, direct, without any melting.

We have several other experiments of much importance under consideration, but they have not advanced to the stage justifying a direct reference to them.

The amount of hydrochloric acid used for each thousand ounces of gold refined was 26.8 pounds.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

July 20, 1906.

Mr. B. L. Whithead,

Assistant Melter and Refiner,

U. S. Mint at Denver,

3218 Summer St., Philadelphia.

Dear Sir:-

With reference to the reverberatory furnace for melting refinery copper, I communicated with the superintendent on the 10th inst. requesting that he secure propositions from the Rockwell Engineering Co. so as to determine cost of same before placing the order, as there is a question as to having sufficient funds to purchase at present. He forwarded my communication to the Rockwell Engineering Co. and in return they ask for more details in regard to the furnace, such as size of melting chamber, working openings, and such other facts as may be pertinent. I would thank you to give me these details at your earliest convenience.

Everything is going smoothly; our settlement was entirely satisfactory to the commission, and the results of our refinery were astonishing. Braddock and Hassan spent several days here, leaving on Wednesday evening for Washington. They expressed themselves as being very agreeably surprised at the results of our preliminary operations.

Trusting you are having a delightful time, I remain,

Very truly yours,

*Joe. W. Milburn*  
Melter and Refiner.

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MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

July 24, 1906.

Robert Clark, Esq.,  
City.

Dear Sir:-

With reference to the quality of gold used in making our ingots, permit me to say:

On February 7, 1906, we received our first melt of fine gold from the Refinery, but, owing to the fact that we had to use .995 gold to make the cathodes, having nothing better, said first melt was only .9992 fine.

Melt No. 2 was .99923 fine;

"	"	3	"	.99931	"
"	"	4	"	.99937	"
"	"	5	"	.99941	"
"	"	6	"	.99979	" ;

and it gradually increased in fineness until Melt No. 20, which had been given a little extra care, ran .99999 plus; and thereafter we made no extra efforts to produce specially fine gold, but rather expended our energies in increasing the output. However, to show that our product continued to be pretty good, I will refer to the result at different times up to our closing down for settlement:

Melts Nos. 35 to 42, inclusive, were all .9999 or better; melts 88 to 100 were equally good; and 92, 93, and 98 were .99999.

The average fineness of all our product for the year was

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Clark - 2

.99985, and for the last month, May, during which we produced 361,634.34 ounces, the average was .9999 plus.

Using exclusively such fine gold, together with pure electrolytic copper for alloy, we secure all the time very ductile ingots; in fact, they have been so perfect that not one has ever been returned unused. Of course this condition has eliminated all strip annealing in the coining department, and has probably effected some saving in other ways.

Sincerely yours,

*Frederick Wilson*  
Melter and Refiner.

WEIGHTS AND MEASURES OF BULLION BALANCES.

## Print of the United States at

Denver, Colorado.

*Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the* **190**

**GOLD.**

STANDARD OUNCES.				STANDARD OUNCES.			
Received				Delivered			
Balance	July 1.	1107	1497	Ingots	142	139	800
Contained in Gold Deposits		137	203	Bars, Fine			
Contained in Silver Deposits				Bars, Standard			
Contained in <i>Coins, Gold and Silver</i>				Bars, Unperfected			
Clippings, blanks, etc.		60	127	Pieces			
<i>Continued from</i>		1055	060	Sweepings			
		137	410				
		878	430				
				Balance	July 31.	1048	812 900
		1801	953			1307	952 700

**SILVER.**

[illegible]

**CORRECT:**

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*Superintendent.*

Melter and Refiner.

U. S. MINT SERVICE  
Form No. 310,  
Ed. Feb. 3-65-501-8 x 10 1/2.

## MELTERS AND REFINERS OF BULLION BALANCES.

Minist of the United States at Denver, Colorado.

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of July, 1906.

**GOLD.**

STANDARD OUNCE				STANDARD OUNCE			
Received							
Balance	July 1, 1906	1	107 132	197 202	275 925		
Contained in Gold Deposits							
Contained in Silver Deposits							
Contained in			60	127	010		
Chippings, blanks, etc.			875	430			
	Con'd Gold						
	Colmer's		1	560	060		
	Set. Bars						
		1	301	952	700		
Delivered							
Ingot							
Bars, Pure							
Bars, Standard							
Bars, Unparted							
Bars							
8 sweeps							
Balance	July 31,	1906	1	153	812	900	
			1	301	952	700	

**SILVER.**

STANDARD OUNCES.					
Received					
Balance	July 1	1906	146	755	53
Contained in gold Deposits			6	948	71
Contained in Silver Deposits					
Unc. S. Coin			3	694	10
Contained in					
Coiner's					
Sat. Bars				37	50
Shipings, blanks, etc.					
<hr/>					
Delivered					
Ingotis					
Bars, Fine					
Bars, Standard					
Bars, Unpaired					
Bars					
Sweeps					
Balance	July 31,	1906	154	107	6
<hr/>					
			160	400	84

COMMENT:

Superintendent,

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Geo W. Milson  
Printer and Binder  
New York

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MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 3, 1906.

Mr. Robert L. Whitehead,  
3218 Summer St.,  
Philadelphia, Pa.

Dear Sir:-

This a.m. I received your communication of the 29th ult. containing your resignation as Assistant Melter and Refiner of the United States Mint at Denver, Colorado, together with the details of reverberatory furnace, as I requested a short time ago. For the latter I thank you; as to the former, I am truly sorry to lose your valuable advice and assistance in our work. Your unqualified success in perfecting the equipment, as well as the operations of our department, especially the electrolytic refinery, entitles you to our commendation and earnest thanks, and the same are hereby tendered. I also thank you for the proffer of your assistance at any time, and I sincerely hope that your future may be a happy and prosperous one.

Please convey my kindest regards to Mrs. Whitehead.

Your resignation is reluctantly accepted, to take effect on the 13th inst.

Sincerely yours,

*John Milson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 3, 1906.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver, Colo.

Sir:-

I this day received a communication, which I attach hereto, from my Assistant, Mr. Robert L. Whitehead, tendering his resignation as Assistant Melter and Refiner of this mint, to take effect on the 13th inst. I have notified Mr. Whitehead of my acceptance of his resignation; and I now have the honor of appointing Mr. Josiah M. Hetrich as Assistant Melter and Refiner of the United States Mint at Denver, Colorado, to take effect on the 16th inst.

Respectfully,

*Jos. M. Hetrich*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 10th, 1906.

Honorable Frank M. Downer,  
Superintendent, U.S. Mint,  
Denver, Colorado.

Sir:-

I have the honor of calling to your attention the fact that, owing to the appointment of Mr. Josiah M. Hetrich as Assistant Melter & Refiner, to take effect on the 16th instant, it will be necessary for me to procure a suitable person to do the work that he has heretofore been doing in the Make-Up room.

Mr. John F. Pughe has been assisting Mr. Hetrich ever since the beginning of our coinage operations, and has become familiar with the work in that department, and besides he is a good careful calculator and always very willing to assist in any kind of work. These things command him to me very highly, and I am earnestly desirous of having him do the work heretofore performed by Mr. Hetrich. I therefore recommend that his compensation be increased to four dollars and fifty cents (\$4.50) per day, to take effect on the 16th instant.

Very respectfully,

*Jos. Milburn*  
Melter & Refiner.

MINT OF THE UNITED STATES AT DENVER.  
MELTER AND REFINER'S DEPARTMENT.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

Responding to the request of The Rockwell Engineering Co., dated July 16, 1906, for further information regarding one crucible and one cupelling furnace and their installation, which was referred to this department, I have the honor to say:

The proposition of the said Rockwell Engineering Co. should be based upon furnishing the necessary material and drawings delivered at the U. S. Mint, Denver, Colo., and we can attend to the erecting ourselves.

As to the reverberatory furnace, the following details are only approximate; the wide experience of said company will no doubt enable them to ascertain herefrom what we want as well as to correct any minor inaccuracies:

Length over all, 6 feet; width over all, 3 feet: hearth measurements, 2 feet by 4 feet; height of combustion end of furnace, 2 feet, 6 inches; height of flue end of furnace, 2 feet: showing that the roof has a pitch down of 6 inches from the combustion chamber to the flue leading to the dust chamber. Charging and dumping door, 12 inches square, placed in centre of front plate: casting to be water-jacketed. Mounted on cast iron legs, sufficiently high to bring the bottom of the charging door 3 feet from floor.

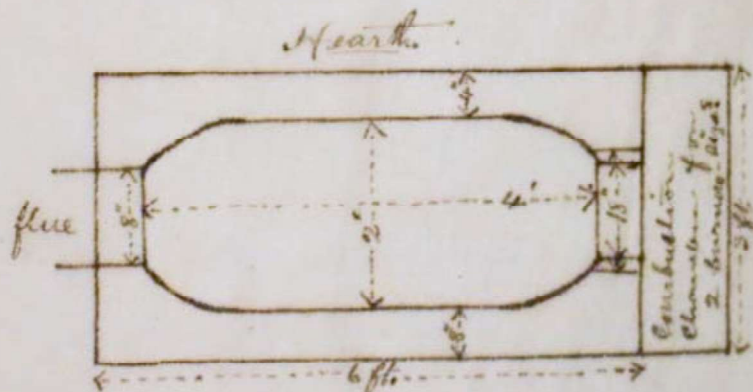
The furnace has only one door and should have two burners. At

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

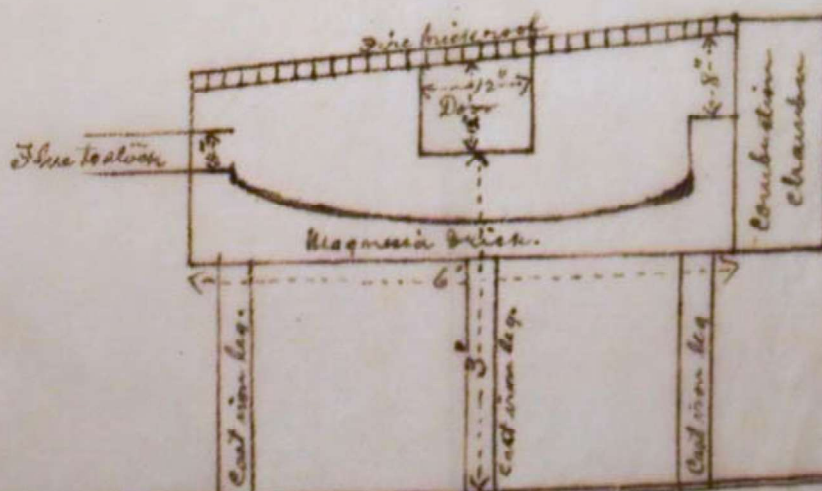
Diagram - 2

concrete brick bottom should be built with the bricks on edge and set (or cabled) so that the bottom slopes to the centre of the furnace, leaving the form of an inverted arch.

The following rough sketch may be of some assistance:



*Side view.*



The size of this combustion chamber, for 2 burners, to be determined by the Roswell Engineering Works and accompany their bid.

*Floor line.*

Basins for water-jacketing not shown.

Respectfully,

*Joe R. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 15, 1906.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of calling your attention to certain disclosures incident to our settlement work:

On May 2, 1906, you delivered to our department 1741 deposit bars, containing 969,289.199 standard ounces of gold, in Vault F. During our operations in May, we extracted from said vault 327 bars, taking as a rule the finest, including a large number of American Smelting & Refining Company's deposits. In checking over this vault for settlement purposes, we weighed each bar and checked same with the book charge against us, whereby we found that 272 A. S. & R. Co. bars, of dates between July 1, 1905, and February 1, 1906, actually had lost in weight the enormous amount of seventeen and seventy-seven hundredths ounces (17.77 ozs.), being an average of a fraction over .065 of an ounce to each bar.

Prior to the receipt of the contents of Vault F, we had discovered that said A. S. & R. Co. bars were running short on weight, and on or about February 1st, called your attention to the fact, and at which time there was had a tacit understanding that the moisture flat allowance of five hundredths to each bar should be increased to seven hundredths. I presume that that was done, because I find that, on the bars of dates between said February 1st

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 2

and March 7, seventy-five in number, the loss had decreased to 1.07 ounces, or approximately .015 to the bar. The loss on individual bars of the first lot reached, in one instance, .27 of an ounce, and in several instances, .23 of an ounce, while the greatest loss on the February--March lot was on two bars that each lost .16 of an ounce, and the total loss in the latter lot was included in 21 bars out of the 75.

Respectfully submitted.

*John W. Wilson*

Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 15, 1906.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor to report that in the shipment of earthenware goods just received from Frederick Bertuch & Co., 907 Temple Court Building, New York, I find two of the "ground in 3/4" cocks" for vessel Fig. 148 (33 gals. capacity) broken. Under their requirements, this notice should be given within 8 days of receipt of shipment, and I therefore recommend that they be informed of said breakage immediately.

Respectfully,

*J. W. Milson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 22, 1906.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of responding to the communication of Tiffany & Co., dated the 18th inst., and referred to this department for answer, as follows:

All our parting and refining of both gold and silver is by the electrolytic process, using, however, in our work, some modifications of the generally known systems. In our gold cells the electrolyte is chloride of gold (made by an entirely new process), and in the silver cells the electrolyte is nitrate of silver.

The question of success can be easily disposed of by a brief statement of facts regarding our work:

We began operating our Refinery in February, 1906, and closed it down for settlement purposes about June 1st, and during that period we produced over 900,000 ounces of gold of an average fineness of 0.99985; and, during the last operating month, May, we produced 361,634.34 ounces of gold of an average fineness of 0.9999 plus; and quite frequently the fine gold melts would check with the proof gold, in which event the assayer would report 0.99999 plus.

The cost of producing said fine gold was approximately one cent per ounce. We have been equally successful in our silver operations, although we have had the silver cells in commission only a short

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 22, 1906.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of responding to the communication of Tiffany & Co., dated the 16th inst., and referred to this department for answer, as follows:

All our parting and refining of both gold and silver is by the electrolytic process, using, however, in our work, some modifications of the generally known systems. In our gold cells the electrolyte is chloride of gold (made by an entirely new process), and in the silver cells the electrolyte is nitrate of silver.

The question of success can be easily disposed of by a brief statement of facts regarding our work:

We began operating our Refinery in February, 1906, and closed it down for settlement purposes about June 1st, and during that period we produced over 900,000 ounces of gold of an average fineness of 0.99985; and, during the last operating month, May, we produced 361,634.34 ounces of gold of an average fineness of 0.999 plus; and quite frequently the fine gold melts would check with the proof gold, in which event the assayer would report 0.99999 plus.

The cost of producing said fine gold was approximately one cent per ounce. We have been equally successful in our silver operations, although we have had the silver cells in commission only a short

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 2

time, owing to the fact that we were expending all our energies on perfecting our equipment for the production of gold for coinage purposes.

It is our opinion that there is no known system of parting and refining of gold or silver that <sup>can</sup> compete with the system we use, either in minimum of cost or maximum of fineness.

With your permission, the accredited representative of said company would be permitted to witness our operations and discuss our methods.

Respectfully yours,

*Joe W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 24, 1906.

Hon. John Q. McDonald,  
Manager Union Plant,  
Florence, Colo.

Dear Sir:-

Your shipment of the 20th inst. being your Nos. 733 and 734, which weighed, in my presence at your plant, 974.88 and 726.27, respectively, arrived here on the morning of the 21st and were weighed under my personal supervision, and the weights were 974.80 and 726.25, showing a moisture loss between mill and mint of .08 and .02, making a total of ten-hundredths (.10) of an ounce. In melting, No. 733 showed considerable slag which was eliminated in the melting process, making a loss of .59 of an ounce. No. 734 was a smaller and cleaner bar, and the melting loss was only .24 of an ounce.

As to the matter of your loss during the past five years, I am giving the matter most careful consideration, and will probably be the latter part of next month before I can report fully, as I desire to check all of your bars carried over from last year, of which we have quite a number on hand; and in the meantime I would appreciate it very much if you would procure and mail me an itemized account of your assays for the last four or five months--that is a statement of the fineness shown by each (top and bottom) assay on every bar for the said period, as this may assist in working the matter out.

Very respectfully,

*John W. Wilson*  
Melter and Refiner.

U. S. MINE BUREAU  
Form No. 319.  
Ed. Pub. 3-65-500.-5 x 10 1/2.

## MELTERS AND REFINERS OF BULLION BALANCES.

Minut of the United States at DENVER

*Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of AUGUST, 1905.*

**GOLD.**

[illegible]

**SILVER.**

[illegible]

**CORRECT:**

*Superintendent.*

1906

Meister und Refiner.

**MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,**

September 12, 1906.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor of directing your attention to the conditions existing in the refinery melting room:

Ever since we began operations in the Refinery, the melting room connected therewith has been and is now overcrowded with work, and the force belonging in said melting room has never been sufficient to do the necessary melting and pouring; so that we have had to take men out of the Refinery from time to time to assist when we were pouring metal, and this tended to delay the refinery work, making it practically impossible to keep the refinery room clean, the sweepings promptly burned, etc.; and now that we are running the silver cells it seems very necessary to have at least one additional melter to enable us to keep up with the making of work, sweats and other necessary, so that we shall not again get in the condition we were in at the commencement of our last settlement, when, as you remember, after only four months' operations, we worked constantly for three weeks making sweats and burning sweepings from the Refinery, with not only our refinery melting force, but, a portion of the time, with the assistance of ingot melting room men. Thus, during most of the time that the mint was shut down for settlement purposes and many of the employes were on vacation,

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 2

our melters were required to remain constantly at work. While I heard of no complaints whatever, yet a continuance of like conditions might have a tendency to cause dissatisfaction. Further, during settlement shut-down, we repair our furnaces, and when we commenced last June to make such repairs in the refinery melting room, of necessity we had to put our force of refinery melters in the ingot melting room where we kept eight furnaces in constant use; and it required, as you know, much strenuous crowding to get a sufficient number of furnaces in the ingot melting room repaired in time to commence the making of ingots when we started up.

A word here regarding the addition<sup>-al</sup> amount of melting required in an electrical refinery as compared with an acid refinery might be appropriate: In an acid refinery the gold is melted just twice, first to make the proper alloy, and last the fine gold. In an electrical refinery, the gold is first melted and cast into anodes; second, the cathodes are melted and cast into fine gold bars; third, the anode tops are remelted and again cast into anodes; fourth, the slimes must all be remelted and also cast into anodes; and there is also some additional melting in the making of ingots for rolling cathode strips and anode hangers; and in the product of the silver cells there is also one additional melt of all gold, being that of melting the silver cell anodes to cast into gold cell anodes. Thus it will be readily seen that an electrical refinery requires much more melting than an acid refinery, and the size of the melting

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 3

force under our system cannot fairly be compared with the size under the acid system.

As soon as we install the additional furnace in the refinery melting room, it will give us four furnaces to be run with a force of five men, and we can then do our work without any assistance from the refinery force, which will be much more satisfactory in every way.

I am in full sympathy with you in your determined effort to keep our operating force at the lowest possible limit, and so have been trying to get along without any additional men, but I do not think our efficiency should be impaired in making such effort, particularly when our cost of producing fine gold is so very low as to prove conclusively the efforts we are making along economical lines.

I therefore request authority to promote helper George B. Gray to the position of assistant melter at a salary of \$4.00 per day, together with authority to appoint a helper to take the place made vacant by said Gray's promotion at a salary of \$3.25 per day.

Very respectfully,

*James Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

September 21, 1906.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver, Colo.

Sir:-

Heretofore it has been the invariable custom to put melters, when first appointed, on the roll at \$4.00 per day; and after they have served their probationary term, learned the work, and become satisfactory employees, to advance them to \$4.50 per day. At the present time, all of the melters in our institution, except three, are receiving \$4.50 per day; and those three, namely, R. C. Morrison, Denver Chaffee, and Xerxes T. Stoddard, have been in our employ from six to eight months, and have learned the work thoroughly and made good in every way. In fact, they are earnest and loyal employees who appear to work for the best interests of the institution at all times; and I therefore recommend that the pay of said Richard C. Morrison, Denver Chaffee, and Xerxes T. Stoddard, be increased to \$4.50 per day to take effect on the first day of October next ensuing.

Very respectfully,

*J. W. Milburn*  
Melter and Refiner.

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MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

September 25, 1906.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver, Colo.

Sir:-

I have the honor to present the following facts regarding the services of employes in the Melter and Refiner's department, together with recommendations as to future compensations, sincerely believing that the same will be of much benefit to the service:

Refinery:

On June 12, 1906, Mr. Robert L. Whitehead, at that time Assistant Melter and Refiner of this Mint, presented to me a written communication with reference to the refinery conditions and employes, among other things, earnestly recommending the appointment of an assistant foreman so that some person clothed with authority to direct the work might be present in case of the sickness or absence of the foreman; he also recommended the promotion of Herbert D. Bartlett, present gold-cell man, to the said position at a compensation of \$4.50 per day. He likewise recommended the appointment of a cell man to take Mr. Bartlett's place in his absence from the gold cells, as well as to assist him when present. I have had the matter under careful consideration, and have become convinced that Mr. Whitehead's recommendations on these points should be favorably acted upon.

Our splendid success in the production of fine gold in the refinery is due in part to the high degree of heat maintained in

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 2

Refinery:

the gold cells, because when the heat is reduced the production is less, and the fineness is lowered; but this likewise creates a partially compensating difficulty, that is, it causes the production of hydrochloric acid fumes in such quantity as to be distressing to the workmen, and although we have hooded the cells and put in a blower, yet the conditions remain unpleasant, if not unhealthy, as we have one or more of the employees on the sick list most of the time. In fact, we have two men sick now, and there have been times when it was necessary to call a physician to the building to relieve temporarily incapacitated employees. I therefore make the following recommendations concerning the refinery force, to wit:

That Herbert D. Bartlett be promoted to the position of assistant foreman at a compensation of \$4.50 per day. That a new cell man be appointed (by way of promotion) at a compensation of \$4.00 per day.

That J. E. Crary's compensation as cell man be increased from \$3.75 to \$4.00 per day.

That the compensation of helpers, George Borstadt, Jr., H. H. Winn, Burt G. Shields, Sam R. Whitaker, Burt H. Taggart, and George N. Spencer be increased from \$3.25 to \$3.50 per day.

Refinery Melting Room:

In this melting room we are doing much work all the time, and it is the hottest place in this mint. Mr. Stodger has proven himself to be one of the most loyal and earnest workers and a splendid

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Downer - 3

Refinery Melting Room:

melter; in fact, he has made good in every way, and I earnestly recommend that his compensation be increased from \$4.00 per day to \$4.50 so as to correspond with that of Dakin, with whom he works, and particularly because he deserves it. I also recommend that the compensation of the helper George B. Gray be increased from \$3.25 to \$3.50 per day.

Ingot Melting Room:

At the present time we are making six silver melts per day, with a force of one foreman, two melters, and two helpers. They are doing splendid work, and are careful and clean in their operations. Heretofore it has been the custom after melters have served their probationary period and become proficient in their work to advance them from \$4.00 to \$4.50 per day; I therefore recommend that the compensation of melters R. C. Morrison and Denver Chaffee be increased from \$4.00 to \$4.50 per day.

I also recommend that the compensation of helpers Michael Howard and Ora L. Adams be increased from \$3.25 to \$3.50 per day.

Sweeps Cellar:

It is the opinion of several mint experts, who have visited us recently, that we are doing splendid work in our sweeps cellar; we have not accomplished all that we desire, but we have made progress, and hope in time to perfect a process that will be entirely satisfactory, not only to ourselves, but to the Mint Bureau. Much de-

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 4

Sweeps Cellar:

pende, however, on the foreman and his assistant; they are both intelligent and practical mill men, and the former being acknowledged as an expert in that line of work. They are very careful and painstaking in making any suggested experiments, and should be encouraged to the fullest extent. I therefore recommend that the compensation of the foreman Elmer S. Smith be increased from \$4.00 to \$4.50 per day, and that of the helper Harry R. Whitehead from \$3.25 to \$3.50 per day.

Deposit Melting Room:

The work and the compensation in this room are entirely satisfactory, and I have no recommendations to make concerning the same.

In conclusion, I desire very respectfully to represent that Mr. R. L. Whitehead in my presence stated to the Honorable Director of the Mint, that living expenses in Denver were at least ten per cent higher than in Philadelphia, and of course he had lived in both cities.

All of which is submitted with the earnest hope that the recommendations herein made may meet with your approval.

Respectfully,

*J. W. Milburn*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

September 26, 1906.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver, Colo.

Sir:-

Mr. J. M. Hetrich, recently transferred from the Mint at Carson City, informs me that said Mint is in possession of a small Chilean mill in the deposit melting room of that institution, and that the same is not now, and for a long period has not been in use. We could use it to very material advantage in connection with our refinery, and I would respectfully suggest that you take the necessary steps to procure the same for us.

Respectfully,

*Joseph W. Milburn*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

September 28, 1906.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver, Colo.

Sir:-

I submit herewith sample page of "Melter and Refiner's Register of Bullion Deposits Received." Inasmuch as we are in need of a register of this kind (there being no such book furnished us), I respectfully suggest that three books of 200 pages each, each page containing 30 or 31 lines, and ruled and printed as indicated, be procured for use in this department.

I also submit sample of Anode melt record, with the suggestion that there be printed 1000 Gold Anode and 500 Silver Anode melt records.

Very respectfully,

*J. H. Hatcher*

Assistant Melter and Refiner.

## MELTERS AND REFINERS OF BULLION BALANCES.

Minist of the United States at

Denver, Colorado.

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of September, 1905.

**GOLD.**

STANDARD OUNCES.				STANDARD OUNCES.			
Received				Delivered			
Balance	Sept. 1, 1906	1	047 779 358	Ingots			
Contained in Gold Deposits				Bars, Fine			
Contained in Silver Deposits		100	886 818	Bars, Standard			
Contained in				Bars, Unparted			
Clippings, blanks, etc.				Bars			
				Sweeps			
				Balance	Sept. 30, 1906	19	
		1	148 666 176				
		1	148 666 176				

**SILVER.**

[illegible]

CORRECTION

Superintendent

October 1

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Möller and Refsum

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

October 15, 1906.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

In answer to the letter of the Honorable Director of the Mi  
dated October 11th, 1906, referred to this department today, I  
have the honor to report as follows:

During the fiscal year ended June 30, 1906, there was sent  
the refinery 17,981.19 standard ounces of silver bullion, upon  
which refining charges were collected; and 10,499.75 standard  
ounces of silver owned by the government upon which no parting  
charges were imposed. There was returned from the refinery  
30,941.30 standard ounces of silver, which included 772.95 stand-  
ard ounces recovered from refinery sweeps, showing an apparent  
gain of 1,687.41 standard ounces, silver, in refinery.

Respectfully submitted.

*James M. Milam*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

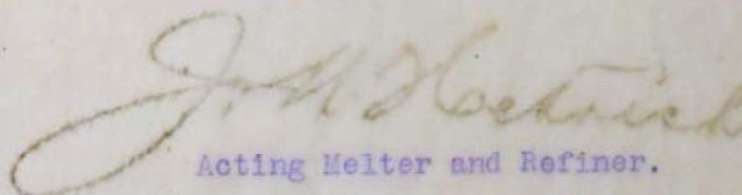
October 19, 1906.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:-

Our present stock of copper for alloy amounts to 3800 lbs.  
At the present rate of consumption, this stock of copper will be  
exhausted in ten or eleven working days.

Respectfully,

  
Acting Melter and Refiner.

## MELTERS AND REFINERS OF BULLION BALANCES.

Print of the United States at *Denver, Colo.*

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of October, 1906.

**GOLD.**

RECEIVED		STANDARD OUNCES.		DELIVERED		STANDARD OUNCES.	
Received				Delivered			
Balance	Oct. 1, 1906	-19-		Ingot		-19-	
Contained in Gold Deposits			1 148 666 176	Bars, Fine			1 270 051 000
Contained in Silver Deposits			1 004 546 413	Bars, Standard			1 270 051 000
Contained in				Bars, Unparted			
Contained in			16 748 910	Bars			
Chipping, blanks, etc.				Sweeps			
				Balance	Oct. 31, 1906		
			1 270 811 469				1 270 051 000

**SILVER.**

	STANDARD OUNCES.					
Received						
Balance	Oct. 1, 1906	19				
Contained in Gold Deposits	262	948	12			
Contained in Silver Deposits	12	474	57			
Contained in Condensation coils	1092	711	09			
Clippings, blanks, etc.	91	647	40			
	426	202	40			
	1987	225	21			
Deliivered						
Ingot's						
Bars, Fine						
Bars, Standard						
Bars, Unparted						
Bars						
Sweeps						
Balance	Oct. 31, 1906	—	10			
	421	471	96			
	1987	225	21			

CORRECTION:

*Superintendent.*

November 1 1906.

Müller und Rosner.

U. S. MINT SERVICE.  
Form No. 319.  
Ed. Feb. 2-05-501-3 x 10 1/2.

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at

Denver, Colorado.

Gold and Silver Bullion Balances in the Melted and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the Month of October, 1906.

GOLD.

Received	Balance	STANDARD OUNCES.			Delivered	STANDARD OUNCES.		
		Oct. 1, 1906	1	148 666 176		Ingots	1	270 011 569
Contained in Gold Deposits			104 546 483		Bars, Fine			
Contained in Silver Deposits					Bars, Standard			
Contained in			16 798 910		Bars, Unparted			
Clippings, blanks, etc.					Bars			
					Sweeps			
					Balance	October 31, 1906.	1	270 011 569
							1	270 011 569

SILVER.

Received	Balance	STANDARD OUNCES.			Delivered	STANDARD OUNCES.		
		Oct. 1, 1906	368 13 945 13			Ingots	1	565 753 25
Contained in Gold Deposits			13 479 19		Bars, Fine			
Contained in Silver Deposits			1098 911 09		Bars, Standard			
Contained in			91 647 40		Bars, Unparted			
Clippings, blanks, etc.			426 242 40		Bars			
					Sweeps			
					Balance	October 31, 1906	1	481 471 95
							1	987 225 21

CORRECT:

November 1, 1906.

Superintendent.

*William M. Miller*  
Melter and Refiner

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

November 13, 1906.

The Rocky Mountain Glove Factory,  
City.

Gentlemen:

Of the four dozen pairs of gloves ordered by this department of you, two <sup>dozen</sup> pairs were not of the right size. We ordered  $1\frac{1}{2}$ , and you sent us 8. We hold them subject to your order.

Respectfully,

*J. H. Heston*

Acting Melter and Refiner.

*Not sent*

**MINT OF THE UNITED STATES AT DENVER,**  
**MELTER AND REFINER'S DEPARTMENT,**

November 17, 1906.

Hon. Frank M. Downer,  
 Superintendent U. S. Mint, Denver.

Sir:

I have the honor of presenting the following report of the operations of this department during the month of October, 1906:

REFINERY.

Product was gold only, standard ounces produced, 68,280.585

Cost of operations:

a. Labor	\$478.00	Cost per oz. of gold produced	.700058586
b. Fuel	49.50	" " " "	.07249560
c. Crucibles	50.60	" " " "	.07410661
d. Acids	61.30	" " " "	.08977738
e. Incidentals	139.40	" " " "	.20415934
f. M. & R. Genl.	96.76	" " " "	.14171060
g. Supt.:			
a. Power	60.53	" " " "	.08864967
b. Mch. shp.	<u>96.15</u>	" " " "	<u>.14081722</u>
Total	\$1032.24	" " " "	1.511775046

New equipment included

in above

figures

79.45	"	"	"	.11635910
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MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

-2-

INGOT MELTING ROOM  
(including Make-up)

Amount of bullion melted, all silver, standard ounces 1,896,409.32

Good ingots made, 20,092 Halves 1,526,223.20

1,171 Quarters 71,393.60

471 Dimes 30,493.25

Total good ingots made 1,628,110.05

Percentage of good ingots to amount bullion melted, .95973892

Cost of operations:

a. Labor	\$2052.29	Cost per oz. of good ingots made	.12605352
b. Fuel	356.40	" " " "	.02189041
c. Crucibles	110.40	" " " "	.00678086
d. Incidentals	406.03	" " " "	.02493873
e. M. & R. Genl.	352.49	" " " "	.02165025
f. Supt.:			
a. Power	71.82	" " " "	.00441124
b. Mch. Shp.	<u>410.89</u>	" " " "	<u>.02523725</u>
Total	\$3730.32	" " " "	.23096228

New equipment

included in

above figures 397.45 " " " " " .02441174

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

-4-

SWEEPS CELLAR.

Amount of sweeps treated, av. lbs. 9,000.

Product, standard ounces, Gold, 98.359; Silver, 415.42.

Cost of operations:

a. Labor	\$108.00
b. Incidentals	6.63
c. M. & R. Genl.	13.10
d. Supt.=Power	<u>12.01</u>
	\$139.73

	Au.	Ag.
8736 lbs. tailings contained, by assay, std. ozs.,	<u>22.332</u>	<u>343.47</u>
Percentage of value recovered	.8149	.5474

We are trying to systematize the procuring of the data for making this report, and trust that in the future we shall be able to present the same much earlier in the month.

Respectfully,

*Joseph W. Milson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

November 21, 1906.

Hon. Frank E. Downer,

Superintendent U. S. Mint, Denver.

Sir:-

I have the honor to report that I have carefully examined the blue-prints of one cupelling furnace and one crucible melting furnace furnished by the Rockwell Engineering Co. of New York. I have also considered their bids on said work. I think the equipment proposed, as shown by said blue-prints, is just what we want, and their guarantee that said furnaces will operate properly for our purposes, in connection with our knowledge of the same, warrants me in recommending the purchase of said equipment for the refinery melting room, at the prices stated in said bids, being respectively, \$1120 for the cupelling furnace, and \$275 for the melting furnace.

Respectfully,

*James Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

November 22, 1906.

Friedrich Bertuch & Co.,

5 Beekman St., New York City.

Gentlemen:

In our Refinery operations we find it necessary to raise a silver nitrate solution (containing about 5% of silver and 5% of nitric acid) from a sump tank on the floor to a supply tank about ten feet high; that is, the distance from the bottom of the sump tank to the pump base is four feet, and the distance from the pump base to the intake of the supply tank is six feet, and the amount of solution we want to handle is ten gallons per minute.

We have tried hard rubber pumps and several other methods of raising said solution, all of which have been unsatisfactory; we have your catalog, but nothing in it seems to cover our conditions. So I would appreciate it very much if you would consider the matter and advise me at your earliest convenience what, in your judgment, is the best method of arriving at the desired end.

Very respectfully,

*J. W. Miller*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

November 28, 1906.

Hon. Frank M. Downer,

Superintendent U. S. Mint, Denver.

Sir:

I have the honor of addressing you with reference to a correction and addition to my annual report of the Melter and Refiner's department for the fiscal year ended June 30th, 1906, to wit:

Correction: Strike out the last two lines on page 3 and the first line of page 4, the sentence being, "By the use of a special form of hard rubber baskets, we now treat our gold cell tops and slimes, as well as the gold anodes from the silver cells, direct, without any melting."

I request this, because our experience since that report was made has caused us to discontinue the use of said hard rubber baskets.

Addition:

Sweeps Cellar.

One of the important departures from former methods is our manner of treating the graphite crucibles, furnace brick, etc., by a wet process. We use an Elspass four-roller quartz mill which consists essentially of a heavy, rigid, revolving bed, upon which rests four stationary rolls: these rolls press upon the die ring to any degree required, being regulated by a screw action on powerful coil springs. Around the circumference of the bed is a rim in which are placed screens of any desired mesh, that can be easily and quickly changed when necessary. The screen has eleven square

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

-2-

feet of free surface in action all the time; it is attached to and moves with the revolving bed, and from the rapid centrifugal action of the water, it does not become clogged, and is very effective in doing its work. The great advantage in this mill is the revolving bed which, in conjunction with the stationary rolls, gives a grinding rather than a crushing effect, so that the amount of slimes produced is astonishingly small. No crusher is used in connection with this work, but the crucibles are hammer-broken into pieces not exceeding three or four inches square and shoveled into the hopper of the mill, into which hopper is also fed a stream of water properly regulated to the necessities of the work. The fineness of the product is of course governed entirely by the mesh of the screen; we have experimented with many sizes, running from 80 to 30 mesh; at present we are using the latter size and are getting splendid results. After the crushed material passes through the screen, it falls into the discharge casing and is washed around to the outlet where it passes through a Pierce Amalgamator into the settling tank for tailings, and the overflow from that tank runs into the settling tank for slimes; said tanks are 18 inches deep, 5 feet wide, and 18 feet long, and the waste flow from the last tank is clear water, practically free of graphite. After the contents of the tanks bed down, the water is drawn off, the tailings and slimes are shoveled onto a convenient steam drier (5'x12') and after being thoroughly dried are sampled for assay and sacked ready for transfer to the superintendent. We have just completed

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

-3-

a run on about 14-1/2 tons of sweeps, and the tailings weighing 88993 lbs. contain by assay 36.696 ounces of gold and 593.70 ounces of silver. From experiments we are now conducting, we expect to still further reduce the values in the tailings.

Respectfully,

*Joseph Wilson*  
Melter and Refiner.

P. S.

In the September "Mines and Minerals" article, there are several inaccuracies, caused principally by later developments, to some of which I will briefly refer:

Page 55, Col. 1, commencing on the last line, "The cathodes are rolled sheets of pure silver, of the same thickness as in the Wohlwill process and are painted with paraffin." To correct, strike out the concluding five words, because we do not paint them with paraffin, or any other material.

Page 55, Col. 2, commencing on line 31, "at the present time the scrap anodes amount to about 8 per cent. and are worked up in special cells without remelting, thus saving washing, drying, and remelting, and with the present output it amounts to a considerable saving in a year's time." To correct, strike out the whole sentence, because we have discontinued the use of the special cells referred to, on account of the difficulty in maintaining the

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

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necessary electrical contact with the contents.

Page 57, Col. 1, commencing with last word on line 1, "the bricks that come in direct contact with the hot gases last about 2 to 3 months with constant use." To correct, strike out the figures "2 to 3" and substitute "1-1/2 to 2".

Page 57, Col. 1, commencing on line 20, "the gas furnaces were discarded and replaced with the oil burning furnaces." It is true, the gas furnaces were discarded, but not because they did not do good work, but for the reason that we were adopting a new fuel system.

Page 57, Col. 2, commencing with line 1, "The gold ingots are rolled and cut into blanks of the different denominations without any strip annealing," etc. Correction, say, "gold and silver ingots."

*J. W. M.*

## MELTERS AND REFINERS OF BULLION BALANCES.

Minist of the United States at DENVER.

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of November, 1906.

**GOLD.**

[illegible]

511-4661

[illegible]

● 〇の形を正しく書く

## Theorem 1

126

Support in the workplace

Water and Icebergs.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

December 4, 1906.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:-

I have the honor to present the following requisition for blank books and forms for use by this department during the next ten months:

- 1	Form No. 413-B	Silver Vault Register
- 1	" " 871	Record of Refinery Gold Melts
- 2	" " 184	Record of Silver Ingot Melting
200	" " 722	M. & R.'s statement of operations
200	" " 373	Storeroom Order
200	" " 537-E	Requisition for Labor and Material
200	" " 82-E	Leave of Absence
12	" " 81-C	Computing Book
300	" " 546	Report of Attendance and Absence
2	Scrap Books (Mark Twain)	

Respectfully,

*Joseph W. Wilson*  
Melter and Refiner.

# MINT OF THE UNITED STATES AT DENVER,

## MELTER AND REFINER'S DEPARTMENT,

December 1, 1900

Hon. Frank M. Downer,

Superintendent U. S. Mint, Denver.

Sir:

I have the honor of presenting the following report of the operations of this department during the month of November, 1900:

### REFINERY

Product: Gold, 62,085.612; Silver, 40,088.55; Total, 102,174.162

#### Cost of operations:

In fractions of a cent

		Cost per oz. of product	
a. Labor	599.00	.586254	
b. Fuel	36.30	" " "	.035587
c. Crucibles	32.20	" " "	.032514
d. Acids	46.80	" " "	.045204
e. Incidentals	124.40	" " "	.121753
f. M. & R. Genl.	171.45	" " "	.167001
g. Supt.:			
a. Power	174.15	" " "	.170446
b. M. Sbp.	<u>239.74</u>	" " "	<u>.234535</u>
Total	<u>1424.04</u>	" " "	<u>1.393740</u>

New equipment included in

above figures 150.05 " " " .146087

Silver and gold cost approximately the same per ounce to refine at the present time.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

## INGOT MELTING ROOM

			Gold	Silver
Amt. of bullion melted			55,448.30	1,149,823.65
	Melts	No.	Denom.	
Amt. good ingots produced	9	594	D.DE's	55,414.83
	63	3642	HD's	574,328.40
	161	11165	QB's	674,280.55
	39	2397	Dimes	161,767.65
Total gold	9	594	55,414.83	
" silver	263	17324		1110,376.60

Percentage good ingots to amt. melted	.99939	.96586
Cost of operations:	Cost per oz. of good ingots in fractions of a cent	

		Gold	Silver
a. Labor	1712.71	.126015	.147957
b. Fuel	181.81	.013372	.015688
c. Crucibles	80.72	.005937	.006973
d. Incidentals	345.61	.025426	.029856
e. M. & R. Genl.	339.57	.024993	.029334
f. Supt. & Power	40.13	.002959	.003466
g. Mch. Shp.	180.16	.008842	.010380
Total	2820.51	.207546	.243856

New equipment included

In above figures	96.33	.007218	.008495
------------------	-------	---------	---------

Silver melts are 1/3 smaller than gold melts, and it costs approximately the same to produce 23 ozs. of silver ingots as it does to produce 27 ozs. of gold ingots.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

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## SWEEPS CELLAR

Amount of sweeps treated, avoirdupois lbs. 9120

Amount of metals extracted, std. ozs. Au. 39.314; Ag. 785.53

Cost of operations:

a. labor 104.00

b. Incidentals 10.41

c. M. &amp; R. Genl. 22.65

d. Supt.:

a. Power 27.09

b. Mch. Shp. 34.00

Total 188.15

	Gold	Silver
8985 lbs. tailings contained by assay, std. ozs.	6.599	212.26
Percentage of values recovered	.85627	.78726

Respectfully,

*Joseph W. Milburn*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

December 20, 1906.

Hon. J. Q. MacDonald,  
Mngr. Union Plant,  
United States Reduction and Refining Co.,  
Florence, Colo.

Dear Sir:

Answering your inquiries of August 20, 1906, relative to the difference in values between the charges of gold bullion at the Union and Standard plants of the United States Reduction and Refining Company, and the credits against such charges by payments from the United States Mint at Denver, Colorado, I have the honor to present the following statement:

On said August 20th, at your request, I visited the Union plant at Florence; you personally conducted me through your works, so that I had the opportunity to and did carefully inspect your melting, pouring, cleaning, and weighing of two bars of gold bullion (your nos. 733 and 734); and the same were shipped to the said U. S. Mint on the evening of said day and were received at the mint the next forenoon (August 21st). I was present, as aforesaid, when said bars were weighed at your plant, at which time they weighed respectively 974.88 and 726.27 ozs. gross; I was also present at the mint when they were received, at which time they weighed respectively 974.80 and 726.25 ozs. gross, showing a moisture loss of .08 and .02 ozs. They were carefully melted under my personal supervision. The granules in the flux and the scraping

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

J.C.M. - 2

of the crucible was in each case separately ground and washed, and you were given the full benefit of the same, as all depositors are, and the weights after melting were respectively 974.21 and 726.01, thus disclosing a melting loss of .59 and .24 ounces, as I wrote you on August 24, 1906.

According to the figures you furnished me, the Union plant bullion shipments to the mint from Dec. 1901 to July 31, 1906, consisted of 725 bars, containing 526,046.92 gross ounces, and the mint returns to you for the same period showed the receipt of 525,759.24 gross ounces before melting, and 525,187.55 after melting, which indicates that there was a loss by drying out between the time you weighed the bullion at your plant and the time it was weighed at the mint (which is immediately upon its receipt) of 287.68 gross ounces; and also that the melting loss during said period was 571.69 gross ounces. These figures show an average loss between mill and mint, by drying out, of .5466 of an ounce for each thousand ounces shipped by you; and a loss by melting at the mint of 1.0873 ounces for each thousand ounces melted. Of course the moisture loss is absolute, although very heavy, and can only be accounted for by drying out, or difference in scales (probably both combined). The melting loss, however, is not excessive, when consideration is had of the operation by fire which eliminates most of the slag.

I am inclined to think that, by some inadvertence, we got our figures wrong on the accounts of December 1901 to July 31, 1902,

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MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

J.Q.M. - 3

as the showing of moisture loss for that period on 74,080.65 gross ounces is 212.46 ounces, or 2.8679 ounces per thousand ounces shipped; while the melting loss is only 122.21 ounces, or 1.6545 ounces per thousand ounces melted. Of course it is possible those figures are correct, as at that time you may have used a different scale. In any event, I believe that we can arrive much closer to the actual percentages by taking the August 1, 1902, to July 31, 1906 shipments, which show the complete business of four full years. During said four years, your shipments of bullion to the mint amounted to 451,966.29 gross ounces; and the returns to you from the mint showed the receipt of 451,891.07 gross ounces, indicating a moisture or drying out loss of 75.22 ounces; and the weight after melting was 451,441.59 gross ounces, indicating a melting loss of 449.48 ounces. These figures make an average drying out loss between mill and mint of .1664 of an ounce for each thousand ounces shipped; and an average melting loss of .9956 of an ounce for each thousand ounces melted. These latter figures seem to be quite as low as it is possible to make them, and by comparison lower than some other lines of deposits.

Under date of August 29th, 1906, you furnished me with a statement of comparative assays made by you on 56 bars of bullion shipped during the months of May, June, July, and part of August of this year. From an examination of this statement, I find that top and bottom assays agreed on only three bars; that the difference in assays on 34 bars ran from one point to 7.9 points; and that on 19 bars the difference was less than one point. In our

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

J.Q.M. - 4

deposit melting work, we are required to bring your bars to such a condition that the top and bottom assays are within one point of agreement; and even at that closeness the assayer makes a second set of assays, and if he finds another variance, or in the event that the difference exceeds one point, we are required to remelt the deposit; and while your statement shows your average fineness of the 725 bars hereinbefore referred to, to be .94184, and the mint fineness on same to be .94275, yet it must be remembered that your fineness is based on 526,046.92 gross ounces, and the mint fineness is based on said amount of bullion less the moisture and melting loss of 859.37 gross ounces; that is, on 525,187.55 gross ounces.

You requested me to give my views regarding any remedy I might have in mind after due consideration of this matter; but that is a feature that requires additional consideration based upon the facts hereinbefore set forth. And, while that is ground that I am reluctant to enter upon, yet I will briefly suggest that a reduction of such moisture loss from your original weights as is indicated by the actual average taken from 451,966.29 gross ounces shipped during the four years hereinabove referred to, together with some mode of melting whereby you could thoroughly mix your gold melts and pour them clean, thus eliminating the weight of the slag and making them sufficiently homogeneous so as to cause the top and bottom assays to agree more closely, would come as near to a solution

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

J.Q.M. - 5

of the matter as any I could present.

Very respectfully,

*J. Q. M.*  
Melter and Refiner.

## MELTERS AND REFINERS OF BULLION BALANCES.

## Mint of the United States at

DENVER, COLORADO.

Gold and Silver Bullion Balances in the Melted and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of December, 1906.

## GOLD.

Received	STANDARD OUNCES.			Delivered	STANDARD OUNCES.		
Balance	1	395	677	Ingots	153	962	450
Contained in Gold Deposits		137	322	Bars, Fine			
Contained in Silver Deposits				Bars, Standard			
Contained in				Bars, Unparted			
Chippings, blanks, etc.				Bars			
				Sweeps 289 sacks (del'd Nov. 19)	40	775	
Dec. 1, 1906							
				Balance	1	379	069
				December 31, 1906	10	502	
					1	535	092
							725

## SILVER.

Received	STANDARD OUNCES.			Delivered	STANDARD OUNCES.		
Balance				Ingots	552	991	25
Contained in Gold Deposits				Bars, Fine			
Contained in Silver Deposits				Bars, Standard			
Contained in				Bars, Unparted			
Chippings, blanks, etc.				Bars			
				Sweeps (see above)			
Dec. 1, 1906							
				Balance	1	254	168
				December 31, 1906	19	87	
					1	507	090
							01

CHECKED:

JANUARY 2

1907

Superintendent.

Melter and Refiner

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

January 23, 1907.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver, Colo.

Sir:

I have the honor of presenting the following report of the operations of the Melter and Refiner's Department for the month of December, 1906:

REFINERY.

Product, 91,407.376 ozs.; gold, 39,407.376; silver, 52,000.00.

Cost of operations

In fractions of cent.

		cost per ounce of product	
a. Labor	900.25		.984282
b. Fuel	55.00	" "	.000175
c. Crucibles	59.80	" "	.000491
d. Acids	33.47	" "	.000366
e. Incidentals	124.75	" "	.136477
f. M. & R. Gen.	212.00	" "	.231951
g. Supt.:			
a. Power	139.17	" "	.152335
B. M. Shp.	11.70	" "	.012719
Total	<u>1536.16</u>	" "	<u>1.384571</u>
New equipment	<u>378.58</u>	" "	<u>.414145</u>

Cost of refining silver and gold, per ounce, approximately the same.  
Refinery closed down Dec. 12, 1906, for some reason, and resumed operations on Jan. 3, 1907. Laboratory was satisfactory.

MINT OF THE UNITED STATES AT NEW YORK  
MELTER AND REFINER'S DEPARTMENT

INGOT MELTING ROOM.

				Gold	Silver
Amt. bullion melted, gross	835,219.860			233,502.800	601,717.0
Amt. of good ingots produced		Melts	No. Denom.		
	105	5677	HD		425,615.0
	2	134	QD		8,270.3
	33	1980	Dimes		134,641.6
	30	1304	DE	183,614.09	
	4	218	E	24,834.82	
	4	264	HE	24,857.44	
Total Gold	38	1786		233,306.35	
Total Silver	140	7791			568,526.9
Percentage good ingots to amt. bullion melted,				.99916	.9448

Cost of operations		In fractions of cents		
a. Labor	1282.50	Cost per oz. of good ingots		.159945
b. Fuel	100.48	"	"	.012531
c. Crucibles	64.40	"	"	.008031
d. Incidentals	218.36	"	"	.027232
e. M. & R. Gen.	301.02	"	"	.037541
f. Supt.:		"	"	
a. Power	28.21	"	"	.003268
b. Mch. Shp.	8.70	"	"	.001064
Total	2001.67	"	"	.249656
New Equipment	57.45	"	"	.007164

Being to increase in the efficiency of the new men in the Ingot Melting Room, there is very little difference in the cost melting gold and silver ingots, and the above computations are based upon the same cost for each, per ounce.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

SWEEPS CELLAR.

Amount of sweeps treated, 5290 av. lbs.

Amount of metals extracted,      Gold, 183.146      Silver, 295.12

Cost of operations:

1. Labor	104.00
2. Incidentals	10.16
3. M. & R. Genl.	20.63
4. Supt., Power	<u>15.57</u>
Total	150.36

5235 av. lbs. Tailings contained by assay, au. 6.282; ag. 47.97

Percentage of values recovered      .98683      .86018

Respectfully,

*Geo. W. Milson*  
Melter and Refiner

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MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

January 29, 1907.

Hon. Frank M. Downer,  
Supt. U. S. Mint, Denver.

Sir:

I have the honor of calling your attention to several items contained in the monthly "cost" statement of the various mints for the month of November, 1907, in so far as such statement relates to the Melter and Refiner's department of the Denver Mint:

1. In the item of "cost per ounce of making ingots," our November report showed for that month a difference between gold and silver, but the silver only is reported in said cost statement, and it is considerably higher than the gold cost, the former being \$.002351 and the latter \$.02005; and computing them both on the same basis of cost gives an average (as most of the product was silver) of \$.002335 and not \$.002436 as shown in said cost statement, which latter figure, by the way, include "new equipment" which was shown on the report and should have been deducted.
2. A peculiar error seems to have been made in said cost statement in the item of cost per ounce for refining. Our November report showed a total cost of \$.012468 (excluding cost of new equipment, as shown on our report), and yet said cost statement for November uses our December report on this item, giving the cost as \$.016805; of course the latter is a high figure for the Denver mint, but is easily accounted for by a reference to our December report which says "Refinery closed down Dec. 15, 1906, for

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 2

semi-annual settlement, and resumed operations on Jan. 3, 1907."

3. The monthly report blank for my department, on ingot melting room, contains an item "e. Sweep Cellar," but the Refinery cost contains no such item, indicating that all the sweeps cellar costs are to be charged to the Ingot melting room. Of course I shall follow the forms presented, but I cannot understand why the Refinery and Deposit melting rooms should not be charged with their proper share of said sweep cellar costs; for, as a matter of fact, we expend more work on refinery sweeps than we do on ingot melting, because on account of their exceeding richness we always treat them twice. Further, the Sweep Cellar blank requires information on product, <sup>only</sup> as to the number of pounds of tailings produced; this does not permit any comparison with other mints, because tailings in some mints run less than one hundred dollars and in others have run over nine hundred dollars per ton; nor does it give the percentage of extraction or the amount extracted; so unless you advise me to the contrary I shall include such additional data in my future reports.

Very respectfully,

*Joseph Milson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

January 29, 1907.

Hon. Frank M. Downer,

Superintendent U. S. Mint, Denver.

Sir:

With the earnest desire of giving credit personally to all those who in any way discover new methods of bettering and expediting our work, I have the honor of presenting herewith a statement of new applications and discoveries made in connection with our Refinery by Mr. B. P. Wirth, Foreman. The dates refer to commencement of experiments, all of which were carried to practical use and success:

1. The manufacture of gold chloride by electrolysis; February, 1906. This enables us to make our gold chloride rapidly and very economically without the use of nitric acid.
2. Treatment of gold-cell slimes by fire, whereby the silver chloride is removed, leaving gold from 950 to 970 fine; March, 1906; and the reduction of the fused chloride of silver with metallic zinc; July, 1906.
3. The use of an insoluble alloy for a hanger in gold-cells, whereby the remelting of tops has been reduced 95%; July, 1906. This enables us to take the top of the gold anode (that is left after all the submerged part has been dissolved) and hang it below the surface of the electrolyte, and thus dissolve it, depositing the gold on the cathodes, and doing away with nearly all of our remelting of anode tops.

## MINT OF THE UNITED STATES AT DENVER,

## MELTER AND REFINER'S DEPARTMENT,

Downer - 2

4. The use of the same alloy metal in the bottom of the gold-cells, reducing the amount of slimes about 50%; Dec. 1906.

5. The reduction of alloy metal in Silver anodes; our proportion being as low as 1 gold to 1.8 alloy; July, 1906.

6. The use of a new material on silver cathodes, whereby the deposited silver can be removed from the cathode after a coherent deposit of one inch has been obtained, thus enabling us to use the same cathodes over and over again; January, 1907. This, of course, saves the expense of making and rolling silver cathode ingots.

7. A very material change in our system of agitation of the electrolyte in the gold-cells, whereby the propeller, instead of being suspended from the center of the cell, now enters the cell from the side at an angle of about 40 degrees, thereby giving us a much greater agitation and entirely eliminating the use of troublesome belts and allowing free access to both anodes and cathodes in all parts of the cell. This latter idea (No. 7) originated with Mr. Charlton, Foreman of the Machine shop, who very ably superintended the making and installation of this valuable system.

We are constantly experimenting in an inexpensive way, and from time to time as any new discoveries of importance are made, I shall be pleased to advise you.

Very respectfully yours,

*James Milburn*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

January 30, 1907.

Frank M. Downer, Esq.,

Supt. U. S. Mint, Denver.

Sir:

I have the honor of presenting for your consideration the necessity of some method for heating to a moderate degree the electrolyte in our silver cells in the refinery. The experiments of Mr. Wirth, Foreman, have demonstrated that the same will be of material benefit, particularly enabling us to increase our product, without any danger from nitric fumes. After the consideration of a number of ways to bring this about, we have concluded that the most economical method would be to place a steam chest or heater under the sump tank, because the solution passes through that tank and we believe we can in that way procure all the heat we want in the cells.

If this proposition meets with your approval, I respectfully request that you immediately take the necessary steps to procure for us a steam chest or heater with an upright flange 12 inches deep, and measurements inside of said flange as follows: length, 53 inches, and width 29 inches, with a two inch steam space divided into as many compartments as may be necessary to make the same absolutely safe, with a cold water test of 200 lbs. pressure, and with steam inlet at one end and waste outlet at the other end.

Very respectfully,

*J. W. Wilson*  
Melter and Refiner.

U.S. MINT SERVICE,  
Form No. 319,  
Ed. Feb. 3-05-500.—8 x 10½.

MELTERS AND REFINERS OF BULLION BALANCES

Print of the United States at Denver, Colorado.

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Deliveries to the Superintendent of the Mint by him during the month of January, 1907.

**GOLD.**

STANDARD OUNCES.				STANDARD OUNCES.			
Received				Delivered			
Balance	Jan. 1, 1907	1	379	Ingots	400	276	060
Contained in Gold Deposits		173	089	Bars, Fine			
Contained in Silver Deposits		22	547	Bars, Standard			
Contained in	cond. coin	151	310	Bars, Unparted			
Clippings, blanks, etc.			380	Bars			
				Sweeps			
		1	726	Balance	January 31, 1907	19	
			875				1,326
			089				595
							029
							1,726
							875
							089

**SILVER.**

STANDARD OUNCES.		STANDARD OUNCES.	
Delivered			
Ingot	156	212	60
Bars, Fine			
Bars, Standard			
Bars, Unparted			
Bars			
Sweeps			
Balance January 31, 1907	617	293	46
	753	606	06
Received			
Balance	254	100	97
Contained in Gold Deposits	14	458	58
Contained in Silver Deposits	443	832	91
Contained in Gold coin	13	371	40
Clippings, blanks, etc.	27	774	30
	753	606	06

CORRECT:

January 31, 1907.

Superintendent.

Mother and Refuser.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, February 9, 1907.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

I have the honor of calling your attention to a matter of serious importance to the Melter and Refiner's Department, to wit:

On the 7th inst you delivered to us by transfer gold shavings in amount, as evidenced by our receipt, of 1065.71 standard ounces, and we are charged with said amount, at the standard fineness of .900.

Ever since the making of these shavings commenced, we have had a doubt as to their fineness, and to accurately determine the question we used all known precautions to prevent the contamination of said shavings in any way; and immediately after their receipt we took them into the ingot melting room, and melted them with the greatest care, using a new crucible and carefully transferring them to the crucible from the box over a metal plate, so as to prevent any loss. We took dip samples for assay, and poured the metal into three bars weighing 1051.43 ounces; then scraped the crucible, cleaned everything up carefully and made a sweat from which we secured a king weighing 5.03 ounces, and the assayer's samples weighed .60 ounce, making a total of 1057.06 ounces--showing a loss by weight of 8.65 ounces. The assayer certified that said bars were of a fineness of .8991, thus showing a loss in fineness of 1.06

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 2

ounces, making the total loss to this department of 9.71 standard ounces, of a value of \$180.65. In addition to the said loss of this department, the corner suffers a loss of 10.74 ounces silver, as the assay on said gold shavings bars shows .00915 in silver, and of course the same is of no use to us, as it simply takes the place of that amount of copper.

Further, if we should have attempted to use said shavings as we do ordinary clippings it would have caused the condemnation of every gold melt into which they had been put, because of the fact that they were nine points below standard and six points below the minimum limit allowed on ingots.

I therefore respectfully ask that we be not required to receive any more shavings from either gold or silver, and that we be reimbursed for the loss hereinbefore shown, to wit, 9.71 standard ounces gold, of a value of \$180.65.

Respectfully submitted,

*John Wilson*  
Melter and Refiner.

INGOT MELTING ROOM.

1. Amount of Bullion melted.....	Standard Ounces.
a. Silver.....	129,168.25
b. Gold.....	548,023.95
c. Nickel.....	
d. Bronze.....	

2. Amount of good ingots made:	
a. Double Eagles.....	21,271.890
b. Eagles.....	447,791.470
c. Half Eagles.....	61,242.830
d. Half Dollars.....	18,400.40
e. Quarter dollars.....	78,568.10
f. Dimes.....	23,706.75
g. Five cents.....	
h. One cent.....	
Total.....	660,981.240

3. Cost of Ingots:

	Gold.		Silver		Total	
	Total	Per oz.	Total	Per oz.	Total	Per oz.
a. Labor	674.58	.001248	150.87	.001248	825.25	.001248
b. M. & R. Gen.	143.29	.000265	32.00	.000265	175.29	.000265
c. Mitts, Gloves	17.63	.000032	3.94	.000032	21.57	.000032
d. Crucibles	42.41	.000078	9.47	.000078	51.88	.000078
e. Sweep Cellar	179.84	.000332	40.17	.000332	220.01	.000332
f. Supt. Dept.						
1. Fuel	71.86	.000133	16.06	.000133	87.94	.000133
2. Power	26.71	.000049	5.97	.000049	32.68	.000049
3. Repairs	33.14	.000061	7.40	.000061	40.54	.000061
4. Incidentals	88.62	.000164	19.79	.000164	108.41	.000164
Total.....	1278.10	.002365	285.47	.002365	1563.57	.002365

New Equipment, \$12.30

4. Percent. of good ingots to amount of bullion melted, gold, .9859	
" " " " " " silver, .9343	

5. Cost distributed to denominations:	Total.	Cents per oz.
a. Double Eagles.....	73.97	\$0.002365
b. Eagles.....	1059.26	do
c. Half Eagles.....	144.87	do
d. Half dollars.....	43.53	do
e. Quarter dollars.....	135.86	do
f. Dimes.....	56.08	do
g. Five cents.....		
h. One cent.....		
Total.....	1563.57	\$0.002365

P.S.

	Gold		Silver		Total	
	Total	Per oz.	Total	Per oz.	Total	Per oz.
"Alloy Copper"						
cost	593.86	.001099	102.12	.000946	695.98	\$0.001082

REFINERY.

1. Product: Standard Ozs.

a. Gold..... 264,855.506  
b. Silver..... 65,000.000

Total..... 329,855.506

2. Costs:

	Total.	Cents per oz.
a. Labor.....	1665.14	\$0.005048
b. Crucibles, covers, rings.....	109.00	.000330
c. Acids.....	330.57	.001002
d. Incidentals.....	182.00	.000551
e. Mitts, gloves, aprons.....	88.30	.000267
f. Chemicals.....	30.00	.000090
g. M. & R. Dept. General.....	370.22	.001122
h. Supt. Department:		
1. Fuel.....	122.65	.000371
2. Electric Current.....	308.06	.000936
3. Repairs.....	96.48	.000292
Total.....	3302.42	.010011

3. New Refinery Equipment..... 813.97  
Total..... \$4116.39

SWEET CELLAR.

1. Product:

a. Sweeps, 9527 Pounds.

2. Cost:

a. Labor..... \$183.00  
b. Incidentals..... 13.83  
c. Supt. Dept.:  
    1. Power..... 20.18  
    2. Repairs..... 3.00

Total..... \$220.01

New Equipment..... \$16.30

3. a. Amount sweeps treated, 9557 lbs.  
b. " metals extracted, Gold, 217.713 std.ozs.; Silver, 70.87 st.  
c. " tailings, 9527 lbs. " 414.64 "  
d. " value in tailings, gold 36.708 " .4786 "  
e. Percentage of extraction " .6557

Respectfully submitted on this 8th day of February, 1907.

*Joseph Wilson*  
Melter and Refiner.

P.S. Amount crude bullion refined, 347,714.77 ozs.  
Cost per ounce, \$0.009497

Superintendent U. S. Mint, Denver.

Sir:

The foregoing report was completed and typewritten on the 8th inst., and thereafter came your instructions to include the "copper alloy" and "crude ounce" costs.

As we had <sup>not</sup> heretofore included the alloy copper in any account, the same has been added as a postscript to the original report on the Ingot Melting Room.

As to the cost per "crude" ounce of refining, I do not know of any possible way in which such figures can be accurately obtained, because, in the electrolytic process of refining, it is necessary to carry so much gold in the refinery that it is impossible to determine the particular crude used during any specified time. For instance, on the last day of January, the refinery had in its possession a balance of 220,822.461 standard ozs. of gold and 103,474.76 standard ozs. of silver, some of which was undoubtedly carried over from December (and practically all of the same will be refined during the month of February). In fact, to do our refinery work economically, it is necessary to carry from ten days' to two weeks' supply of gold on hand, so that anodes, cathodes, hangers, etc., can be kept in stock that there may be no delay at any stage of the work; so it is apparent that the crude bullion charged to the refinery, say, from Dec. 20 to Jan. 20, would much more closely approximate the crude refined in January, than would the crude delivered to the refinery in the month of January. It is equally apparent that there can be no close relation between the particular crude delivered in any month and the refined product for the same month. However, approximating from the average fineness of our anode melts and the amount of standard ounces produced, we arrived at a conclusion which I have added as a postscript to the refinery statement. Trusting this may be satisfactory, I respectfully submit the same this February 11th, 1907.

*J. W. Wilson*  
Editor and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

February 13, 1907.

Hon. Frank M. Downer,

Superintendent U. S. Mint, Denver.

Sir:

Anent your inquiry concerning the Alherene stone sinks, raised by my requisition of this date for a lead lined wood sink for the refinery, I have the honor to present the following statement of facts:

When we commenced operations in our refinery in January, 1906, we had, as part of our equipment, two Alherene stone sinks; one in the refinery proper, size 9'x 2'x10" inside measurement, and one in the refinery laboratory, size 44"x 20"x 10", inside measurement. The former commenced to crack in July, 1906, and the crack developed so much that we took it out in September following and substituted temporarily a lead lined wood sink; the laboratory sink commenced to crack in October, 1906, and it has developed to the point where it leaks continually. These two sinks were made of slabs of Alberene stone, and believing that if the sink could be made out of one solid piece it would stand our work, we procured such an one for the refinery, size 54"x 25"x 10", and it was set in place December 31st, 1906, and commenced to crack about the first of this month, and the crack has now developed to the point where it leaks continuously. These cracks all developed gradually, and were not the result of carelessness or blows of any kind, but, in our opinion, were caused by the continual use of hot water.

MINI OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

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This morning's requisition was made for a lead lined wood sink to take the place permanently of the last sink hereinbefore referred to.

Very respectfully,

*J. C. Minter*

Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

February 13, 1907.

Hon. Frank M. Dwyer,

Superintendent U. S. Mint, Denver.

Sir:

I have the honor of calling your attention to a very unpleasant error occurring in the report of the Director of the Mint for 1906; that is, unpleasant for the Denver Mint, and especially the Melter and Refiner's department thereof. On page 46, our report shows that we recovered a surplus of both gold and silver during the year ending June 30, 1906, to wit, 165.461 standard ounces of the former and 2430.06 standard ounces of the latter; yet the concluding paragraph of what appears to be our report states:

"At the annual settlement of the melter and refiner's accounts it was found that there had been a wastage during the year of 110.24 standard ounces of gold, valued at \$2,050.97, being 13.99 per cent of the legal allowance on the amount received from the superintendent, or 14.36 per cent on the amount operated upon; and 61.70 standard ounces of silver, being 24.91 per cent of the legal allowance on the amount received from the superintendent, or 25.19 per cent of the amount operated on."

Said paragraph was not included in the report as it left our office, and, of course, states the very opposite of what is shown by the preceding details of the report to be the facts.

I trust there is some way by which this error can be corrected, so that it may be known that we do not claim a final surplus in one part of our report and show a final loss in another part.

Very respectfully,

*Joseph M. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

February 25, 1907.

Hon. Frank M. Downer,

Superintendent U. S. Mint, Denver.

Sir:

I have the honor of reporting the following facts relative to all the ingot melts that could possibly have entered into the making of the double eagle coins included in coin transfer No. 33 of May 2, 1906. The first melt of double eagle ingots made in April, 1906, was on the 17th day of that month and numbered 93, and the last melt of the same denomination made in that month was numbered 140, made on April 30th. So I have included in a tabulated statement following, all of said melts numbered 93 to 140, inclusive, showing, towit, the date of each ingot melt, the ingot number of the melt, the number of the fine gold melt or melts from which the ingot melts were made, the gross weight of the fine gold used in each melt, the fineness of each fine gold melt, taken from the assayer's original certificates of assay, the ounces of alloy copper used in each melt, the standard ounce weight of each melt as made up, the standard ounce weight of the ingots produced in each melt, the fineness of the ingots of each melt, taken from the assayer's original certificates of assay and the amount of copper included in each melt to cover loss of copper by oxidation. Such tabulated statement therefore shows fully the composition of each melt as prepared in the make-up room; and to such melt there is added in most instances a sufficient amount of clippings (presumed to be of standard fineness) to bring the melt up to the desired size, as shown in the column under the heading "weight of resulting melt".

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Date	No.	No.	Gross Wt.	Fine.	Ozs.	Std. Wt.	Std. Wt.	Ingot	Ozs.
Apl. Ing.	1906 Mlt.	Fine Gold Melt	Fine Gold		Alloy Copper	Make-up	Resulting Melt	Assay	Copper Orid'n
17	93	52	1185.53	99996	131.67	1317.20	4922.21	.8997+	.75
	94	53	1168.59	99992	129.73	1298.32	5357.89	.8997+	.75
	95	53	1233.52	"	136.94	1370.46	5197.02	.8998+	.75
	96	53	1270.98	"	141.10	1412.08	5412.35	.8997+	.75
18	97	53	1401.10	"	155.55	1556.65	4787.94	.8998	.75
	98	54	1468.48	99995	163.08	1631.56	5239.52	.8992+	.75
	99	54	1471.31	"	163.39	1634.70	5363.94	.8999	.75
	100	54	1501.74	"	166.77	1668.51	5773.53	.8998	.75
19	(101	54	778.53	"	86.46	864.99			
	(101	55	3001.33	"	353.31	3534.64	5296.97	.8999+	1.00
	(102	55	2702.79	"	300.15	3002.94			
	(102	56	966.14	9999	107.24	1073.32	5382.65	.8997	1.00
	(103	56	3555.79	"	394.69	3950.48	5193.93	.8997+	1.00
	(104	56	1768.29	"	196.28	1964.57			
	(104	57	1835.60	99986	203.87	2039.27	5277.79	.8997+	1.00
20	105	57	733.07	"	81.33	814.40	5043.91	.8997	.75
	106	57	775.52	"	86.04	861.56	5266.64	.8997+	.75
	107	57	685.07	"	76.01	761.08	5536.01	.8998	.75
	108	57	717.95	"	79.64	797.59	5502.31	.8997+	.75
21	109	58	2878.45	99986	319.38	3197.83	5121.67	.8999	1.00
	110	59	3572.26	9999	396.52	3968.78	5187.22	.8999	1.00
	111	59	3468.66	"	385.02	3853.68	5211.28	.8998	1.00
23	112	60	811.29	99994	90.08	901.37	5252.74	.8997+	.75
	113	60	737.87	"	81.93	819.80	5234.76	.8997+	.75
	114	60	713.76	"	79.25	793.01	5339.92	.8997+	.75
	115	60	731.12	"	81.18	812.30	5666.11	.8998+	.75
	116	60	4461.31	"	495.40	4956.71	5463.46	.8998+	1.25
24	117	61	4641.04	99986	514.94	5155.98	5145.25	.8999	1.25
	(118	61	1845.95	"	204.81	2050.76			
	(118	62	2808.10	9999	311.03	3113.13	4825.02	.8997	1.25
	(119	62	1768.30	"	196.28	1964.58			
	(119	63	2813.61	99993	312.40	3126.01	5064.17	.8999	1.25
	(120	63	3007.52	"	333.93	3341.45			
	(120	64	1655.18	99987	183.66	1838.84	5753.38	.8997	1.25
	(121	64	188.65	"	20.93	209.58			
	(121	65	4393.45	99993	487.81	4881.26	5245.52	.8998	1.25
25	(122	65	1218.43	"	135.28	1353.71			
	(122	66	3302.22	9999	366.54	3668.76	4440.80	.8999+	1.25
	(123	66	1854.98	"	205.90	2060.88			
	(123	67	2644.91	99992	293.64	2936.55	5182.99	.8998+	1.25
	(124	67	931.25	"					
	(124	68	3741.46	99992	518.77	5191.48	5025.01	.8997	1.25
	125	69	4665.52	99997	518.23	5183.75	5514.85	.8998+	1.25
	(121	69	742.76	"	82.50	825.26			
	(121	70	3856.05	99995	428.23	4284.28	5079.94	.8998	1.25

## MINT OF THE UNITED STATES AT DENVER,

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## MELTER AND REFINER'S DEPARTMENT,

Date Apr. 1906	No. Ing. Mlt.	No. Fine Gold Melt	Gross Wt. Fine Gold	Fine.	Ozs. Alloy Copper	Std.Wt. Make-up	Std.Wt. Resulting Melt	Ingot Assay	Ozs. Copper Oxid.
26	126	70	789.66	99995	87.69	877.35	5155.15	.8998*	.75
	127	70	995.08	"	110.50	1105.58	5252.30	.8997	.75
	128	71	756.62	99986	83.95	840.57	5236.11	.8998*	.75
	129	71	760.53	"	84.38	844.91	5838.07	.8997	.75
	130	71	728.54	"	80.61	807.15	5219.90	.8999	.75
27	131	71	1036.84	"	115.04	1151.88	5369.72	.8997	.75
	132	72	803.33	99987	89.14	892.47	5802.05	.8998	.75
	133	72	769.29	"	87.62	877.31	5625.58	.8998	.75
	134	72	3599.18	"	399.38	3998.56	5524.11	.900	1.00
28	135	72	3684.89	"	406.68	4071.57	4879.69	.8999*	1.00
	136	75	3578.44	99992	397.06	3973.50	5553.40	.8999	1.00
	137	73	528.08	"	58.62	586.70	5322.47	.8997*	.75
30	138	73	536.95	"	59.61	596.56	6360.62	.8997*	.75
	139	73	527.05	"	58.51	585.56	5363.40	.8999	.75
	140	73	735.57	"	81.44	815.01	5758.35	.8998	.75

The foregoing tabulated statement, taken from our records without omissions or additions, shows Ingot Melt No. 121 twice, first on April 24th, and again on the next day, April 25th; such duplication on our records being accounted<sup>ed</sup> for as follows: On or about said dates, the Coiner believing the roughness of some of the ingots prevented him from getting a satisfactory percentage of good blank in cutting, requested me to pick out the rough ones for remelting and not require him to accept them; upon making a personal examination, I found that there were some grounds to sustain his belief, and so on April 25th I concluded to and did sort out for remelting all of Ingot Melt No. 121, consisting of 70 ingots, and 28 ingots from Melt No. 120, 21 ingots from Melt No. 122, and 8 ingots from Melt No. 124, all of which had been passed by the Assayer as to fineness; and on that day I had the same number (121) given to a melt then being made; and on the next day, April 26th, the said

**MINT OF THE UNITED STATES AT DENVER,**  
**MELTER AND REFINER'S DEPARTMENT,**

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gots so sorted out and withdrawn were all remelted (being used the same as clippings), in Melts Nos. 126, 127, 128, and 129, all of which were found to be of the required fineness by the Assayer. We immediately took the necessary steps to make smooth ingots, and our product ever since has been very satisfactory to the Coiner.

The first ingot melt of any kind ever condemned in the Denver Mint, was Gold Melt No. 174, double eagle ingots, made on May 10, 1906.

It is not possible for coin transfer No. 33 of May 2, 1906, to have contained any coin made from ingots delivered by the Melter and Refiner later than the last day in the month of April, as ingots delivered May 1st could not produce finished coin for transfer on May 2d. From April 18th to April 30th, inclusive, we delivered to the Coiner, through the Superintendent, 228,624.57 ounces of double eagle ingots, and received through the same channel 64,192.88 ounces of double eagle clippings, and the Coiner's statement shows that during the same period he delivered to the Superintendent 124,968.75 ounces of double eagle coins, leaving a balance in his hands on May 1st from double ingots received by him during said period prior to May 1st, of 39,462.94 ounces. On May 2d and 3d we received additional double eagle clippings amounting to 15,356.30 ounces, and the Coiner's statement shows that on said dates he delivered to the Superintendent 26,875.00 ounces double eagle coin, making a total of 42,231.30; which indicates

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

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clearly that the Coiner had on May 3d disposed of all the double eagle ingots received April 18 to 30, inclusive, either by transfer of coin or clippings. At the times hereinbefore referred to we were running very close on fine gold, and clippings were returned almost daily, to enable us to make the necessary ingot melts; and from a consideration of all these facts it does not appear possible that clippings from any of the ingots that went into coin transfer No. 33 of May 2d could have gotten into ingot melt No. 174 on May 10th, the first one condemned.

Respectfully submitted,

*Joseph W. Milasone*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

February 28, 1907.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

I have the honor as well as the pleasure of answering the February 19, 1907, inquiry of Hon. Frank A. Leach, Superintendent of the San Francisco Mint, with reference to the result of our experiment in changing the form of the combustion chamber of our melting furnaces, as follows:

We originally rounded the corner opposite the point where the oil and air enter the combustion chamber, in one furnace in the Ingot melting room. The result of the use of that furnace was not as carefully noted as it might have been, and the report did not show any material difference from that of the regular furnace. Next we rounded all the corners, except the one where the fuel enters, in a furnace in the Refinery melting room, and it has been in use now for about two months, and the melter in charge of that room informs me that it is certainly of material benefit in the use of the furnace; that he can get his melts down quicker and do the work with less oil than in the regularly built furnace; however, he has also closed the low vent at the back of the combustion chamber, so that all heat escaping from the combustion chamber must come to the top of the crucible and pass out into the flue through a recess made in the back slides that surround the top of the crucible, and I have no doubt this assists in producing the results of

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

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tained. We are making further experiments on these lines (I have just had another furnace in the Ingot melting room built with round corners in the combustion chamber) but I am fully satisfied now that I shall adopt the round corners for all the furnaces. With the rounded corner the space to heat up and keep hot is of course less than in the square cornered furnace, and further the blast in the round cornered chamber makes more of a swirling or circular motion around the crucible, which causes it to heat up more uniformly, and the drive of the blast is not concentrated so much upon one side of the crucible, and that means a saving of crucibles, as indicated by the experiments in the Refinery melting room.

I shall be pleased to report any material facts developing from further experiments.

Very respectfully,

*Joe Wilson*  
Melter and Refiner.

U. S. MINT SERVICE.  
Form No. 219.  
Ed. Feb. 3-05-500.-8 x 10 1/2.

## MELTERS AND REFINERS OF BULLION BALANCES.

Paint of the United States at

*Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of February, 1907.*

**GOLD.**

[illegible]

**SILVER.**

[illegible]

CORRECT:

March 1

1907

Superintendent.

Melton 1777  
- 1777

# INGOT MELTING ROOM.

1. Amount of Bullion melted:	Standard Ounces.
a. Gold .....	388,554.870
b. Silver.....	237,250.180
Total	625,805.050

2. Amount of good ingots made:	
a. Eagles.....	375,353.390
b. Quarter Dollars.....	15,442.15
c. Dimes.....	216,582.25
Total	607,377.790

3. Cost of Ingots:	Gold		Silver		Total	
	Total	Per ounce	Total	Per ounce	Total	Per ounce
a. Labor	\$449.40	.001197	345.70	.001489	795.10	.001309
b. M.&R.Gen:	117.75	.000313	90.59	.000390	208.34	.000343
c. Mitts, glvs	5.53	.000014	4.25	.000018	9.78	.000016
d. Crucibles	27.29	.000072	20.99	.000090	48.28	.000079
e. Sweeps Cel.	75.26	.000200	57.90	.000249	133.16	.000219
f. Alloy Copper	420.81	.001121	323.70	.001395	744.51	.001225
g. Incidentals	38.14	.000101	29.33	.000127	67.47	.000111
h. Supt. Dept.						
1. Fuel	60.53	.000161	46.57	.000200	107.10	.000176
2. Power	2.20	.000005	1.70	.000007	3.90	.000006
3. Repairs	16.63	.000044	12.80	.000055	29.43	.000047
Totals	\$1213.54	.003228	\$933.53	.004020	\$2147.07	.003531

4. New Equipment..... 228.89

5. Sick leave, vacations and holidays..... 59.57

Total Expense ..... \$2435.53

6. a. Per cent of good ingots made to amt. bullion mlt'd, Gold .9652+  
 b. " " " " " " " " " " Silver .9779+

7. Cost distributed to denominations:	Total	Cost per ounce.
a. Eagles .....	\$1213.54	.003228
b. Quarter Dollars.....	62.13	.004020
c. Dimes.....	871.40	.004020
Total	\$2147.07	.003531 (average)

REFINERY.

1. Product:	<u>Fine Ounces</u>	<u>Standard Ounces</u>
a. Gold.....	277,400.438	308,222.709
b. Silver.....	88,231.680	98,035.200
Totals.....	<u>365,632.118</u>	<u>406,257.909</u>
2. Costs:	Totals	Cents per oz.
a. Labor .....	\$1464.81	.36056
b. Crucibles, covers, rings....	83.40	.02052
c. Acids.....	358.59	.08825
d. Incidentals.....	133.45	.03284
e. Mitts, gloves, & aprons...	78.37	.01929
f. Chemicals.....	25.00	.00615
g. Sweeps cellar.....	71.64	.01763
h. M. & R. Gen'l .....	208.33	.05128
i. Supt. Dept.:		
1. Fuel oil.....	160.12	.03941
2. Power.....	485.03	.11939
3. Repairs.....	52.75	.01298
4. Light.....	102.31	.02518
Totals.....	<u>\$3223.80</u>	<u>.79348</u>
3. New Refinery Equipment.....	494.03	
4. Sick leave, vacations, holidays	<u>68.94</u>	
Total Expense.....	<u>\$3786.77</u>	
5. Crude bullion refined, ounces, appx.....	<u>442,982.020</u>	
6. Cost per crude ounce.....		.72784
7. Cost per standard ounce.....		.79348
8. Cost per fine ounce.....		.88170

SWEEPS CELLAR.

1. Product:

a. Sweeps..... 13,273 pounds  
b. Gold..... 127.349 standard ounces.  
c. Silver..... 402.103       "       "

2. Costs:

a. Labor..... \$138.50  
b. Power..... 17.10  
c. Repairs..... 3.30  
d. Light..... 37.44  
e. Incidentals..... 20.00  
Total..... \$216.34

3. Tailings:

a. Amount..... 13,273 pounds  
b. Contained gold.... 45.182 standard ounces  
c.       "       silver.. 343.537       "       "

4. Percentage of extraction:

a. Gold..... .738  
b. Silver..... .539

5. Departments charged as follows:

a. Refinery.....\$ 71.64  
b. Ingot melting room 133.16  
c. Coiner..... 11.54  
Total       \$216.34

Denver, March 9, 1907.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

I have the honor of presenting herewith the monthly report of the operations of the Melting and Refining Department of the Denver mint for the month of February, 1907:

Complying with your request, I respectfully present the following observations with respect to the form and contents of said report:

My January report was made in strict conformity with the report blanks sent out by the Director under date of January 23, 1907, except as to the Sweeps Cellar, to which there was a necessary addition to show the results obtained in that department. Under the requirements of the Director's letter of February 25, 1907, (presuming that it applies as well to the reports of operative officers as to the Superintendent's), I have shown the cost per ounce for refining in fractions of a cent and the cost of making ingots in fractions of a dollar. I believe it would be better to have this basis uniform, and, in my opinion, "fractions of a cent" basis is the better. As to the "alloy copper" item, it seems to be misleading to include it in the "cost" of operations; the percentage of alloy is of course the same in all the mints, and therefore it might be better to carry it as a separate item, the same as "new equipment." Where one mint works on coining new silver and another on "uncurrent coin," the "total" cost varies considerably; for instance, the report for the month of January of the Philadelphia Mint shows a charge of only \$4.47 for copper, while the Denver mint is charged \$593.86. So it would perhaps be better to cut that charge out of the "costs" entirely, as it cannot vary on like work in any of the mints.

Referring again to the cost of refining per "crude" ounce, and supplementing my letter accompanying the January, 1907, report of this department on the same subject: An estimate based upon the final product

of a refinery is probably not as fair a test as if based upon the crude ounces treated, unless all the refineries were operating upon precisely the same class of bullion, which, of course, is impossible. To illustrate, the product of the American Smelting and Refining Co. runs on an average about .995 fine; that product is simply run into anodes (with a small amount of low grade bullion added), and run through the gold cells and the result is a very large percentage of fine gold at the minimum cost. As against this, consider the Camp Bird Cyanide bars which run from .400 to .450 fine; we first make them into anodes for the silver cells, and after they have passed through the silver cells we remelt the gold product and make anodes for the gold cells through which they must also pass; and the final result is a much smaller percentage of gold (or gold and silver) than the A.S. & R. Co.'s bars produce, and at an increased cost, although in each instance operating upon the same original amount of crude. However, it is practically impossible to determine the amount of crude treated during any given period unless a complete clean-up is made each time, and that cannot be accomplished in less than two or three weeks in an electrolytic refinery. So that way of determining the matter for monthly reports is eliminated. I notice the Philadelphia mint report covers this item by "crude bullion sent to refinery." In the Denver mint that method would be meaningless, because as shown in my former letter, above referred to, "there can be no close relation between the particular crude delivered in any month and the refined product for the same month." To show more clearly what I mean I will give actual accounts taken from our records, to wit:

We started up the refinery, after settlement last year, on July 10th, and from that date to the end of the month we sent to the refinery 265,073.07 gross ounces and received from the refinery during the same period 121,030.22 gross ounces of fine gold, which left on hand in the refinery on August 1, 1906, 144,042.85 gross ounces, less of course whatever base metals had been eliminated by refining. During August we sent to the refinery 343,877.38 ounces of bullion which with the balance on hand at the first of the month made a total charge

against the refinery for the month of August of 487,420.25 gross ounces, and during the month of August we received from the refinery 268,897.75 gross ounces fine gold, leaving on hand in the refinery on September 1 218,522.48 ounces which would last approximately half the month of September following.

However, as the work of a refinery is the parting of metals, I believe the truest test of work performed would be based on the amount of base metals eliminated; but, owing to the reasons already given, that prevents the correct ounces of crude bullion treated from being obtained for any given period, the amount of base eliminated cannot be obtained other than by approximation. So after careful consideration of the matter I think the cost of the refinery for monthly reports might be based wholly on the product, as that is the only exact figure obtainable, and the annual report might show in addition the amount of crude bullion treated, as well as the amount of base eliminated.

I have made a few changes in the sweep cellar report<sup>so</sup> as to exhibit fully and clearly the operations of that department.

Respectfully,

*Jo. W. Milson*  
Melter and Refiner.

The difference in the cost of making the above ingots is largely due to the alloy copper; the half eagle melts contained many made of clippings only, and the quarter dollar ingots were all clippings, and no copper was used in them; and of course the Mexican 50 centavos contained twice the amount of copper used in our own standard. This would indicate that my position on the alloy question, as set forth in letter of March 9, 1907, attached to February, 1907, report, is worthy of consideration; that is, to cut out of the cost items the alloy copper charge and carry it as a separate item, the same as "new equipment."

-2-

## REFINERY.

1. Product:	Fine Ounces	Standard Ounces
a. Gold . . . . .	195,823.107	217,581.230
b. Silver . . . . .	95,999.994	106,666.660
Total . . . . .	291,823.101	324,247.890

## 2. Costs:

	Totals	Cents per oz.
a. Labor	1065.02	.32845
b. Crucibles, covers, rings	108.67	.03351
c. Acids	233.55	.07202
d. Incidentals	147.92	.04561
e. Mitts, gloves, aprons	55.95	.01725
f. Chemicals	25.00	.00771
g. Sweeps Cellar	64.64	.01993
h. M. & R. Genl.	138.90	.04283
i. Fuel	119.47	.03684
j. Power	396.52	.12228
k. Repairs	31.77	.00979
l. Light	160.00	.04934

Totals 2547.41 .78556

3. a. New Refinery Equipment	532.48
b. Settlement clean-up expense	914.38

4. Sick leave, vacation and holidays	24.28
--------------------------------------	-------

Total Expense 4018.55

5. Crude bullion refined, approximate ounces	378,367.366
6. Cost per crude ounce . . . . .	.67326
7. Cost per standard ounce . . . . .	.78563
8. Cost per fine ounce . . . . .	.87292

-3-

## SWEEPS CELLAR.

## 1. Product:

a. Sweeps, avoir. lbs.	16,834
b. Gold, standard ounces,	425.576
c. Silver, " "	483.702

## 2. Costs:

a. Labor	152.59
b. Power	35.57
c. Repairs	8.20
d. Light	40.00
e. Incidentals	<u>22.65</u>

Total	259.01
-------	--------

3. New Equipment	0.00
------------------	------

4. Vacation, sick leave and holidays	<u>37.75</u>
---	--------------

Total Expense	<u>296.76</u>
---------------	---------------

## 5. Tailings:

a. Amount, 16,834 avoir. lbs.	
b. Contained Gold, standard ounces,	112.074
c. " Silver " "	358.702

## 6. Percentage of extraction:

a. Gold, .7915
b. Silver, .5741

## 7. Departments charged as follows:

a. Ingot melting room	162.50
b. Refinery	112.38
c. Coiner	21.88

Respectfully submitted,

*Joel Milson*  
Melter and Refiner.

Denver, April 8, 1907.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, April 26, 1907.

RECEIVED of Frank M. Downer, Superintendent of U. S. Mint, Denver, Colorado, the following Gold Bullion, coming through the Settlement Commission, from Coin Transfer 33, sixteen bars, weighing 6218.33 gross ounces; one bar of same Coin Transfer, weighing 1649.10 gross ounces; clipped coins and assay clippings from same Coin Transfer, 443.38 gross ounces; and clipped coins and assay clips from Coin Transfers 29 and 35, weighing 152.15 gross ounces; Total 8,462.96 gross ounces.

*J. W. Milson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

April 29, 1907.

RECEIVED of Frank M. Downer, Superintendent of the Mint of the United States at Denver, Colorado, at Settlement March 31, 1907, eight hundred and seventy thousand four hundred and forty-eight and six hundred and twenty-three thousandths (870,448.623) standard ounces of gold, and eight hundred and nineteen thousand six hundred and two and fifty-one hundredths (819,642.51) standard ounces of silver.

*J. W. Milson*  
Melter and Refiner.

## WEIGHTS AND MEASURES OF BULLION BALANCES.

Minist of the United States at DENVER.

*Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of March*, 1907.

**GOLD.**

[illegible]

**SILVER.**

[illegible]

CORRECT:

1907.  
MAY 1

Superintendent.

Refiner

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

April 30, 1907.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

I have the honor of presenting the following as my estimate of the supplies necessary for the use of the Melter and Refiner's Department for the fiscal year commencing July 1, 1907:

Graphite Crucibles, Dixon's No. 80, Mint Special	400
" " " " 14	50
" Covers for " " 80 Mint Special Crucible	100
" 4" Rings for " " " " " "	200
" 2" " " " " " " " "	200
" Stirrers, round, Mint Special, for gold	50
" Dipping cups, Dixon's No. 2	100
" " " " " 3	100
" " " " " 4	200
Clay Crucibles, 20 gm.	200
Clay Crucibles, Battersea "K"	100
Fire Clay, the best	lbs. 2000
Charcoal, powdered	bbls. 15
" granulated	" 25
Best Lard	" 2
Acid, Sulphuric Com. (66 Be.)	tons 5

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

April 30, 1907.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

I have the honor of presenting the following as my estimate of the supplies necessary for the use of the Melter and Refiner's Department for the fiscal year commencing July 1, 1907:

Graphite Crucibles, Dixon's No. 80, Mint Special .....	400
" " " " 14 .....	50
" Covers for " " 80 Mint Special Crucible ..	100
" 4" Rings for " " " " " " ..	200
" 2" " " " " " " " " ..	200
" Stirrers, round, Mint Special, for gold .....	50
" Dipping cups, Dixon's No. 2 .....	100
" " " " " 3 .....	100
" " " " " 4 .....	200
Clay Crucibles, 20 gm. ....	200
Clay Crucibles, Battersea "K" .....	100
Fire Clay, the best .....	lbs. 8000
Charcoal, powdered .....	bbls. 15
" granulated .....	25
Best Lard .....	2
Acid, Sulphuric Com. (66° Be.) .....	tons 5

## MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT.

Downer - 2

Acid, Nitric Com. (38° Be.), free from chlorine - - - -	Tons	20
" Hydrochloric Com. (22° Be.) - - - - -	"	40
Bone Ash - - - - -	bbls.	3
Saltpetre - - - - -	"	8
Soda Ash - - - - -	"	15
Dust Brushes - - - - -		35
Borax Glass, ground - - - - -	bbls.	10
Sand, common - - - - -	"	10
Cryolite, Greenland - - - - -	"	3
Gelatin, pure - - - - -	lbs.	150
Ammonium Chloride, Com. - - - - -	"	200
Ferrous Sulphate of Iron (Green Vitriol) - - - - -	bbls.	50
* Rubber Gauntlets, best grade white flexible, sizes, 9, 9 <sup>2</sup>	prs.	100
* " " " " black " 11, 13	"	50
* Buckskin gloves, the best, sizes 9 & 9-1/2	"	300
* " Mitts - - - - -	"	100
Plain white 1/2 gallon china Pitchers - - - - -		25
Pitchers, 4 gal. Earthenware, side handles - - - - -		15
* Asbestos Mitts - - - - -		150
" Cement - - - - -	lbs.	50
* Carpet Mitts - - - - -		1000
Quicksilver - - - - -	lbs.	300
Brass Screen, 30, 40, 60 or 80 mesh - - - - -	sq-ft.	100
Acids, C.P., Nitric, Spec.gr. 1.42 - - - - -	lbs.	100
" " Hydrochloric, sp.gr. 1.20 - - - - -	"	75
" " Sulphuric, " 1.84 - - - - -	"	45

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 3

Acids, C.P., Acetic	-----	lbs.	20
C.P. Ammonia	-----	"	100
Com. "	-----	"	500
Rubber stoppers, assorted sizes	-----	"	25
Rubber Hose, best quality, light walls, 1/8" to 1/2" dia.	ft.		100
" " " " heavy " 1/4" to 1"	" "		200
Cyanide Pot.	-----	lbs.	20
* Cheese Cloth	-----	-bolts	20
* Muslin, bleached	-----	"	5
Litharge, C.P.	-----	lbs.	25
Silica, powdered	-----	"	300
Salt, common	-----	"	50
" rock <i>crushed</i>	-----	"	4000
* Towelling	-----	-yds.	100
Lead, granulated, free from silver	-----	-lbs.	25
Zinc, slabs	-----	-tons	3
* Unbleached sheeting, 10/4 wide	-----	-bolts	12
Iron turnings	-----	-tons	2
Fire brick, best	-----		7000
<i>rafs</i> " " splits, best	-----		500
Fire brick pedestals for #80 Crucibles	-----		300
Magnesite, powdered	-----	lbs.	200
"00" Twine	-----	"	300
Hydrogen Peroxide	-----	bottles	12
Sodium, metal	-----	lbs.	5
Long-handle floor brushes	-----		15

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer -- 4

\* Double-end Brass Brushes - - - - - 50  
Arch tile (fire brick) #2937 Arch tile, rights - - - - - 50  
" " 2938 " " lefts - - - - - 50  
" " 2934 Hood " tops - - - - - 40  
" " 2935 " " rights - - - - - 40  
" " 2936 " " lefts - - - - - 40  
*slides, 09* Fire clay Furnace Slides, quarters - - - - - 1000  
Oxalic Acid, Com. - - - - - lbs. 25  
" " C.P. - - - - - " 10  
China Soup Plates, 12" - - - - - 40  
Flat bastard files, 14" - - - - - doz. 3  
\* Aprons - - - - - -200  
\* Sleeves - - - - - prs. 200

\* Samples to accompany all starred articles.

Respectfully,

*Joseph Wilson*  
Melter and Refiner.

## M I N T

Denver, Colo.

Melter and Refiner's

January, 1907.

Farnum St. John	1	1	30	
E.P. Schell		1		
X.T. Stoddard	3		30	
"	1			Without pay
S.R. Whitaker			30	
C.W. Dakin	1			
G.N. Spencer	2			
Geo. Borstadt, Jr.		3		
G.B. Gray	3			
"				
O.L. Adams	4	3	96	Without pay
Denver Chaffee	3	2		
Michael Howard	1			
H.R. Whitehead	1			
R.C. Morrison				
B.P. Wirth			5	
W.S. O'Brian			26	
	1			

## M I N T

Denver

Melter and Refiner's

February,

R.G.Arnold	1	2	
H.D.Bartlett			30
Geo.Borstadt, Jr.		4	30
J.R.Boyle		1	
G.B.Gray	1		
Michael Howard	3		
J.F.Pughe		2	30
E.S.Smith		1	
Spencer, G.N.		3	
Farnum St.John		6	
B.H.Taggart	7		
S.R.Whitaker		3	
H.R.Whitehead			30

M I N T

Denver

Melter and Refiner's

March, 1907

---

O.L.Adams	1	3	
H.D.Bartlett	1		
Geo.Borstadt,Jr		2	30
R.C.Morrison		1	
J.F.Pughe			45
E.P.Schell		1	
E.S.Smith	9	3	30
G.N.Spencer		7	
F.St.John		4	
B.H.Taggart			30

M I N T

Denver

Melter and Refiner's

April, 1907

O.L.Adams	7		
H.D.Bartlett	1	3	
Geo.Borstadt, Jr.	2		30
J.R.Boyle	1		
Chaffee, Denver	6		30
J.H.Crary	6		
C.W.Dakin	2		
G.B.Gray	6		
M.Howard	1		
R.C.Morrison	6		
W.S.O'Brian	1		
J.F.Pughe		1	
M.J.Quirk	2	3	
E.P.Schell		6	
B.G.Shields	1		30
G.N.Spencer	7		30
F.St.John		1	
X.T.Stoddard	4		
S.R.Whitaker	1	2	30
H.H.Winn	1		
B.P.Wirth	3	1	30

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

May 3, 1907.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

In accordance with your request of the 2d inst., I have the honor to present the following requisition for blank books and forms for use by this department during the next ten months:

2	Form No. 184	Record of Silver Ingot Melting
6	" " 81-C	Computing Books
100	" " 373	Storeroom Order
100	" " 537-E	Requisition for Labor and Materials
200	" " 82-E	Leave of Absence
100	" " 546	Report of Attendance and Absence
2 Doz.	Pads Form No. 1765,	Calculating Paper
2	" " " " 1766	" "
2	" " " " 1767	" "

Respectfully,

*Joel Wilson*  
Melter and Refiner.

U. S. MINT SERVICE  
Form No. 219  
Ed. Feb. 1-06-00-5 x 194.

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at DENVER

APRIL

1907.

Gold and Silver Bullion Balances in the Mint by him during the

GOLD.

Received Apl. 23, Redelivery by  
Balance Supt. at Set'mt.  
19  
Contained in Gold Deposits  
Contained in Silver Deposits  
Contained in Condensed Coin  
Clippings, blanks, etc.  
Bullion from Commission  
Coiner's Settlement Bars

STANDARD OUNCES.			
870	448	623	
42	500	265	
3	589	927	
5	820	270	
8	868	250	
2	507	550	
	345	782	
934	080	665	

Delivered  
Ingots  
Bars, Fine  
Bars, Standard  
Bars, Unparted  
Bars  
Sweeps  
Balance April 30, 1907

STANDARD OUNCES.			
934	080	665	
934	080	665	

SILVER.

Received Redelivery by Supt. at  
Settlement  
19  
Balance  
Contained in Gold Deposits  
Contained in Silver Deposits  
Contained in Fine Bars  
Clippings, blanks, etc.  
Condensed Coin  
Coiner's Settlement Bars

STANDARD OUNCES.			
819	642	51	
6	501	25	
6	675	32	
950	878	40	
195	814	01	
83	140	76	
	628	18	
2	063	280	43

Delivered  
Ingots  
Bars, Fine  
Bars, Standard  
Bars, Unparted  
Bars  
Sweeps  
Balance April 30, 1907

STANDARD OUNCES.			
646	537	60	
1	416	742	82
2	063	280	43

CORRECT:  
Frank W. Brown  
Superintendent.

MAY 3 1907.

Superintendent.  
Melter and Refiner.



# REFINERY.

1. No product. Operations consisted only of clean-up for settlement.

2. Costs:

a. Labor.	Settlement clean-up expense	341.83
"	Vacation, sick leave & holidays	126.67
"	Repairs in Refinery	283.00
b. Crucibles, covers & Rings	- - - - -	29.70
c. Incidentals	- - - - -	23.70
d. Mitts, gloves & aprons	- - - - -	4.50
e. Sweeps Cellar	- - - - -	180.00
f. M. & R. General	- - - - -	208.33
g. Fuel	- - - - -	58.50
h. Power	- - - - -	20.00
i. Repairs	- - - - -	44.50
j. Light	- - - - -	15.00

Total - - - - - 1235.73

3. New Equipment - - - - - 46.65

Total Expense - - - \$1282.38

## SWEEPS CELLAR.

1. Product: a. Sweeps, avoird. lbs., 20,222.  
b. Gold, standard ounces, 301.889  
c. Silver " " 519.99

2. Costs: a. Labor 150.78  
b. Power 30.00  
c. Repairs 11.25  
d. Light 35.00  
e. Incidentals 37.27  
Total 264.30

3. New Equipment 2.50

Total Expense \$266.80

4. Tailings: a. Amount, avoird. lbs., 20,222.  
b. Contained gold, standard ounces, 242.869  
c. " silver " " 611.30

5. Percentage of extraction: a. Gold, 55  
b. Silver 54

6. Departments charged as follows:

a. Ingot Melting room \$ 84.30  
b. Refinery 180.00

Respectfully submitted, May 8, 1907,

*Joe W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

May 31, 1907.

Hon. Frank M. Downer,

Superintendent U. S. Mint, Denver.

Sir:

I have the honor of calling your attention to the compensation of the melters in this department. On December 16th, 1905, at which time the Deposit Melting room was under the supervision of the Melter and Refiner, I wrote you as follows:

Sir:-

I have the honor to report that the following Melters in the Deposit Melting room, viz:

Chas. W. Dakin, appointed April 18, 1905,

A. B. McElroy, promoted June 1, 1905, and

Wm. M. Bush " July 11, 1905,

have all progressed favorably and are now good and competent workmen.

Therefore, on account of this assiduity and success, I recommend that they, and each of them, be advanced in salary to the regular melters wages, to wit: four dollars and fifty cents (\$4.50) per day, from and after January 1st, 1906.

And on the same day I also recommended an increase in the compensation of the foreman of the Deposit Melting room to \$5.50 per day; all of the said recommendations were made to conform to the scale of wages obtaining in the mint at San Francisco for like services. You approved my recommendations and the Honorable Director of the Mint accepted your approval and authorized the payment of the wages as recommended.

There was no express statement that the foregoing fixed the standard of wages for melters in this institution, but I obtained the impression therefrom, that, during the first six months of

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 2

service, the probationary period, the wages would be \$4.00 per day and thereafter, if the employee made good, that upon proper recommendation he would be advanced to \$4.50 per day.

Conditions have changed materially in the Deposit Melting room since that time, and on account of the decrease of work in that department, on March 1st, 1906, I transferred C. W. Dakin to the Refinery Melting room, and in March of the present year, at your request, I accepted a transfer of W. M. Bush to the Ingot Melting room.

The names and compensations of the melters at present employed in this department are as follows:

Ingot Melting room: M. J. Quirk, foreman,	per day, \$5.00
R. C. Morrison, melter	" 4.00
Denver Chaffee, "	" 4.00
W. M. Bush, "	" 4.50
Refinery Melting room: J. R. Boyle, foreman	" 5.00
C. W. Dakin, melter	" 4.50
X. T. Stoddard, "	" 4.00

These inequalities in compensation are certainly unjust, because there is no difference in the work performed or the hours employed. In fact, the men work side by side, some at \$4.00 and others at \$4.50 per day; and, in the case of R. C. Morrison, in the absence of the foreman, he performs his duties, and yet receives only \$4.00 while Bush, working under him (during such absence of the foreman,

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Downer - 3

receives \$4.50 per day.

These men have all made good in every way, they are loyal and competent melters, and take pride in doing their work and doing it well. Therefore, in the interest of fairness, and believing it right and just, I do most earnestly recommend and request that the pay of R. C. Morrison, Denver Chaffee, and X. T. Stoddard be increased from \$4.00 to \$4.50 per day.

Sincerely hoping the foregoing may receive your unqualified approval, I remain,

Very respectfully,

*Joseph W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

May 31, 1907.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

I have the honor to request that you procure for the Melter and Refiner's Department one calculating machine, "The Millionaire," for making calculations pertaining to Refinery work, which has grown to such an extent that it is extremely difficult and sometimes impossible to handle promptly with our small clerical force.

Respectfully,

*Joseph W. Wilson*  
Melter and Refiner.

U. S. MINT SERVICE.  
Form No. 219.  
Ed. Feb. 3-05-500-8 x 10 1/2.

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at DENVER

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of May, 1907.

GOLD.

Received	STANDARD OUNCES.				Delivered	STANDARD OUNCES.			
	Balance								
May 1, 1907									
Contained in Gold Deposits	934	080	665		Ingots				
Contained in Silver Deposits	53	314	054		Bars, Fine				
Contained in	3	574	428		Bars, Standard				
Clippings, blanks, etc.					Bars, Unparted				
					Bars				
					Sweeps				
					Error in receipt #70, coiners' Settlement Bars				002
					Balance May 31, 1907	19	990	969	125
	990	969	127				990	969	127

SILVER.

Received	STANDARD OUNCES.				Delivered	STANDARD OUNCES.			
	Balance								
May 1, 1907									
Contained in Gold Deposits	416	742	83		Ingots (Mexican 50-Centavo)	1	503	478	51
Contained in Silver Deposits	6	751	75		Bars, Fine				
Contained in	7	399	70		Bars, Standard				
Clippings, blanks, etc.	757	278	27		Bars, Unparted				
	370	115	35		Bars				
	202	946	63		Sweeps				
					Balance May 31, 1907	19	1	257	756
	2	761	235	13			2	761	235

CORRECT:

June 1, 1907.

Superintendent.

588

Seamilaon

Melter and Refiner.

Leiter und Revisor.  
Schmid

527	428	1
527	428	1

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400

STANDARD OUNCES

STANDARD QUINCES

200	200	154
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MELTERS AND REFINERS OF BULLION BALANCES.

EQ. REP. 3-02-200--8 x 10<sup>1/2</sup>  
KODAK NO. 313  
U.S. MARINE SERVICE

## M I N T

Denver, Colorado

Melter and Refiner's

of May, 1907

C. L. Adams		1		Leave
H. D. Bartlett			30	"
Geo. Borstadt		1		"
W. M. Bush			30	"
Denver Chaffee	1			"
R. C. Morrison			30	"
J. F. Pughe	1			"
E. P. Schell		2		"
E. S. Smith	1			"
G. N. Spencer	2	2		"
Farmum St. John	1	6		"
X. T. Stoddard	1			Without pay
"		1	15	Leave
S. R. Whitaker	1	1		"
Whitehead, H. R.		1		"
H. H. Winn	6	2		"
B. P. Wirth		1		"
"		2		Sick

INGOT MELTING ROOM.

1. Amount of bullion melted:	Standard ounces
a. Gold (4 Commission melts--2 remelted and 1 condemned) . . . . .	28,396.62
b. Silver . . . . .	1731,265.89
Total . . . . .	1759,662.51
2. Amount of good ingots made:	
a. Half eagles . . . . .	15,413.74
b. Mexican 50-Centavos . . . . .	1666,105.35
Total . . . . .	1681,519.09

3. Cost of Ingots:	Gold		Silver		Total	
	Total	Per oz.:	Total	Per oz.:	Total	Per oz.:
a. Labor	35.32		2172.05	0013036	2207.37	0013127
b. M. & R. Gen'l	6.67		410.00	0002460	416.67	0002477
c. Mitts, gloves	.76		46.99	0000282	47.75	0000284
d. Crucibles	1.77		108.63	0000652	110.40	0000656
e. Incidentals	3.18		195.26	0001171	198.44	0001180
f. Fuel	4.47		274.83	0001649	279.30	0001661
g. Power	.78		48.20	0000289	48.98	0000291
h. Light	.70		42.99	0000258	43.69	0000259
i. Repairs	.87		53.28	0000319	54.15	0000322
j. Vacation, sick leave & holidays	.98		60.32	0000362	61.30	0000364
Totals	55.50	0036008	3412.55	0020482	3468.05	0020624
k. Alloy Copper	0.00		3885.86	0023323	3885.86	0023109
Totals including Copper	55.50	0036008	7298.41	0043805	7353.91	0043733
4. New Equipment					42.00	
Total Expense					7395.91	

5. Average cost per ounce of ingots for five months:	Gold	Silver	Total
a. Excluding copper	.0025549	.0023280	.0023890
b. Including "	.0035118	.0045209	.0042495
6. a. Per cent. of good ingots made to amt. bullion melted, Gold	.5428		
b. " " " " " " " " Silver	.9623		

7. Cost distributed to denominations:	
a. Half Eagles . . . . .	\$ 55.50
b. Mexican 50-Centavos	7298.41
Total	\$7353.91

REFINERY.

The Refinery was closed down all month, and the expense of new equipment and its installation was \$513.00

SWEEPS CELLAR.

The Sweeps Cellar was closed down the entire month.

Respectfully submitted June 6th, 1907.

*J. C. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

June 10, 1907.

Hon. Frank M. Downer,  
Supt. U. S. Mint,  
Denver.

Sir:

I have the honor of complying with your request of the 7th inst., relating to the inquiries contained in the communication of Colonel C. M. Porter, Master of the English Mint at Calcutta, India, to the Honorable Director of the United States Mint, concerning the <sup>Elspass</sup> wet-grinding mill, by stating the following facts:

We have complete and exact data of the operations of our Sweeps Cellar for the six months ending March 31, 1907, and I will confine my statements of results to those months; so it will be well to remember that the figures presented, covering actual operations, are those for just one-half of a year.

1. The sweeps consisted of worn-out graphite crucibles, slag from "sweats" and fire-brick from inside of melting furnaces; the amount treated was 63,044 avoirdupois pounds.
2. The amount of bullion recovered was 982.31 ounces of fine gold, and 2288.47 ounces of fine silver; being 82-1/2 per cent. of all gold values and 58-1/2 per cent. of all silver values. The tailings from the mill were then sold to the smelters, and in that way we recovered the balance of the values. We hope and believe that eventually we will recover to exceed 95 per cent. of all values, by the addition of further appliances with which we are

## MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Downer - 2

now experimenting.

3. The cost of recovering the aforesaid bullion (being the total expenses of the sweeps cellar, which included labor, supplies, power, light, and everything else) was \$1173.60.

4. The amount of mercury on hand October 1, 1906, and purchased thereafter prior to March 31, 1907, was 225 lbs., and the amount on hand March 31 was 145 lbs., showing a final loss of 80 lbs. in the treatment of about 31-1/2 tons of sweeps. Of course the amount actually used was much greater than these figures indicate, because the mercury recovered in retorting the amalgam was used over and over again.

5. We purchased our mill in the spring of 1905, paying therefor the sum of \$4395.00, which price included the amalgamator. The mill was built specially for our use, and differs in several details from the standard mill; the changes being necessary, in our opinion, to better adapt it to mint requirements. The most important change was the "closed" die space, which I will explain: The die space, or bed on which the roller presses in the standard mill has a channel (about 1-1/4 inches wide) cut into the bed around the outer edge, which is filled with wood or possibly cement, so that it will give slightly under heavy pressure and thus prevent the outer edge of the roller from wearing faster than the inner edge; this faster wearing on the outer edge is supposed to be caused by the centrifugal action of the revolving bed forcing the material (frequently hard quartz) to the outside, so that the

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Downer - 3

outer edge of the roller would have more work to do than the inner edge. We required the "closed" die space, thus doing away with the channel, because the greater part of the material we crush is graphite (crucibles), and its comparative softness eliminates the question of excessive wear on the outer edge; and, further, it takes considerable time to clean out the channel and extract the gold from its contents, as well as to again refill or pack it for further grinding.

Another necessary change was doing away with the automatic top feed, which required a preliminary dry crushing of the material, and that was one of the things we particularly desired to avoid, because the dry graphite dust is very objectionable, as it permeates everywhere, causing not only discomfort but damage as well. We use an ordinary chute on the side, hammer breaking the material and shoveling it into the mill as necessary.

We have used 30, 40, 60, and 80 mesh brass screen in our operations with the mill; at present we are using 40 mesh and getting good results, better, we believe, than with any other size.

The crushed material passes from the discharge casing into a "Pierce Gold Separator and Amalgamator," (41 riffles), and from thence into the settling tanks. We use two settling tanks, each 18 feet long, 5 feet wide, and 18 inches deep; they are placed tandem, thus giving us 36 lineal feet of settling tankage; the overflow from the end of the second tank being practically clear water.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Downer - 4

We have been experimenting recently with a small copper-plate (3 feet by 10 feet) below the amalgamator, that is, between the latter and the first settling tank; we are very much pleased with the results, and have almost concluded to install a regular plate of 5 feet by 16 feet, as we thereby can recover some very fine gold that passes the amalgamator.

In close proximity to the settling tanks we have a steam drier of our own design, size 5 feet by 12 feet, onto which we shovel the tailings from the settling tanks, where they are dried, then sampled and sacked for shipment to smelter.

The capacity of the mill is much greater than indicated by our work; on some kinds of ore it would reach one to one and a half tons per hour; but the graphite must be handled slowly to get the best results in extraction. To illustrate: In December last, we did not have a large amount of material to treat, and our extraction was 96-1/2 per cent. of the gold values and 86 per cent. of the silver values; but in February following we treated about two and one-half times as much material as we did in December, and our extraction fell to 74 per cent. of the gold values and 54 per cent of the silver values. In my opinion, the capacity of the mill on mint sweeps should not be pushed beyond one ton in four to six hours.

Respectfully submitted,

*Joseph Milson*  
Melter and Refiner.

M I N T

Denver, Colorado

Melter &amp; Refiner's

of June, 1906

Adams, C.L.	1	4	30	Leave
Boyle J.R.		3		"
Bush, W.M.		1	30	"
Chaffee, D.		1	30	"
Crary, J.H.		3	45	"
Gray, G.B.	1			Sick
Howard, M.		1	30	Leave
Morrison, R.C.		2	30	"
Pughe, J.F.		2	30	"
Quirk, M.J.			45	"
Scheil, E.P.		2	30	"
Smith, E.S.		1	30	"
Spencer, G.N.	2			Sick
"		3	45	Leave
St. John, F.	3	1		"
Stoddard, X.T.		1	30	"
Taggart, B.H.	2	1	30	"
Whitaker, S.R.			45	"
Whitehead, H.R.		1	30	"
Winn, H.H.		1		"
Wirth, B.P.		4		"

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at DENVER

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of June, 1907.

GOLD.

Received	June 1 19	STANDARD OUNCES.			Delivered	STANDARD OUNCES.		
Balance		990	969	125	Ingots	15	413	570
Contained in Gold Deposits		50	205	638	Bars, Fine			
Contained in Silver Deposits		3	771	482	Bars, Standard			
Contained in			15	713	Bars, Unparted			
Clippings, blanks, etc.					Bars			
					Sweeps			
		1 044	961	958	Balance	1 029	548	388
						1 044	961	958

SILVER.

Received	June 1 19	STANDARD OUNCES.			Delivered	STANDARD OUNCES.		
Balance		1 257	756	62	Ingots	1 660	203	69
Contained in Gold Deposits		6	838	20	Bars, Fine			
Contained in Silver Deposits		7	477	88	Bars, Standard			
Contained in			4	75	Bars, Unparted	4	669	00
Clippings, blanks, etc.		489	974	09	Bars			
		435	959	87	Sweeps			
Con'd coin			553	90	Balance	553	692	62
Special						3 198	565	31
silver								

CORRECT:

July 1

1907.

*Summation*

June, 1907, report of the M. & R. Department of the U.S. Mint, Denver.

-----  
INGOT MELTING ROOM.

1.	Amount of bullion melted: all silver,	1,709,837.92 std. ozs.
2.	Amount of good ingots made, Mexican	
	50-Centavos - - - - -	1,665,010.75 "
3.	Cost of Ingots:	Total Per ounce
	a. Labor - - - - -	1828.30 .00109806
	b. M. & R. Gen. - - - - -	416.67 .00025025
	c. Mitts & Gloves - - - - -	47.20 .00002834
	d. Crucibles - - - - -	96.60 .00005801
	e. Incidentals - - - - -	154.25 .00009264
	f. Fuel - - - - -	241.15 .00014483
	g. Power - - - - -	42.06 .00002526
	h. Light - - - - -	34.28 .00002058
	i. Repairs - - - - -	53.94 .00003239
	j. Vacation, sick leave and holidays - - - - -	52.62 .00003160
	Totals	2967.07 .00178201
	k. Alloy Copper - - - - -	2435.81 .00146293
	Totals including copper	5402.88 .00324495
4.	New Equipment - - - - -	16.50
	Total Expense	5419.38
5.	Average Cost per ounce of ingots	Gold Silver Total
	for six months, excluding copper - - - - -	.00255497 .00214622 .00222675
	Ditto, including copper - - - - -	.00351181 .00409599 .00398089
6.	Per cent. good ingots made to amount bullion melted, Silver,	.97378
7.	No distribution of costs--all Mexican 50-Centavos.	

-----  
REFINERY

Not operating. Cost of New Equipment and Installation, \$1238.99  
-----

SWEEPS CELLAR

Not operating.

Respectfully submitted, July 8, 1907.

*Joseph M. ...*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

The Melter and Refiner received from the Superintendent during the fiscal year ended June 30, 1907:

Gold Account	Standard ounces	Standard ounces
In bullion . . . . .		2,968,301.148
In surplus recovered, and delivered at settlement, March 31, 1907 . . . . .		382.370
Returned in Ingots . . . . .	1,938,648.360	
" " Sweeps . . . . .	486.770	
On hand . . . . .	1,029,548.388	
	2,968,683.518	2,968,683.518

Silver Account		
In bullion , . . . .		8,652,097.53
In surplus recovered, and delivered at settlement, March 31, 1907 . . . . .		11,589.97
Returned in Ingots . . . . .	8,122,912.41	
" " Sweeps . . . . .	2,413.47	
" " Fine bars . . . . .	4,669.00	
On hand . . . . .	533,692.62	
	8,663,687.50	8,663,687.50

The surplus, as well as the additional amount necessary to cover actual operating losses, was recovered from unreported fractions of assays, from fractional gains in weight of deposits, and from the difference between standard and actual fineness of ingots delivered. The silver surplus includes the "1/99th" contained in unparted deposits, amounting to 4,216.68 standard ounces.

## MINT OF THE UNITED STATES AT DENVER,

2

MELTER AND REFINER'S DEPARTMENT,

The following melts were made:

Metal	Deposits	Anodes	Cath.	Mint Bars	Set. Bars	Copper	Special	Ingots	Totals
Gold	4616	415	5	302	30		2	323	5693
Silver	134	135	10	20	68		3	2287	2657
G. & S.						74	509		583
Totals	4750	550	15	322	98	74	514	2610	8933

Ingot melts condemned: Gold, 3; Silver, 9.

1056 sacks of Sweeps were gathered during the year, containing by Mint assay, 486.77 standard ozs. gold, and 2413.47 standard ozs. silver.

Refinery operations were confined to a period of six months only, and were as follows:

Gold Account		Standard ounces	Standard ounces
Delivered to the Refinery bullion containing			1,708,189.456
Surplus recovered, and returned at			
Settlement, March 31, 1907 . . .			271.210
Returned in fine bars . . . . .	1,603,391.451		
" " settlement bars . . . . .	104,788.878		
" " Sweeps . . . . .	280.337		
	1,708,460.666		1,708,460.666
Silver account			
Delivered to the Refinery bullion containing			340,289.95
Surplus recovered, and returned at			
Settlement, March 31, 1907 . . . . .			4,848.98
Returned in fine bars . . . . .	26,140.92		
" " " " for make-up . . . . .	198,805.83		
" " settlement bars . . . . .	118,621.17		
" " Sweeps . . . . .	1,571.01		
	345,138.93		345,138.93

Average fineness of fine gold produced, .99976+; fine silver, .9994+

Receipts: Charges collected for parting	\$24,823.81	
Surplus bullion recovered	7,955.14	\$32,778.95

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Statement of Available Silver on Hand, Close of business, July 20, 1907.

	-----	
	Std. Ounces	
Fine Bars	240,126.02	
Quarter Dollar Ingots	182,209.30	
Clippings	<u>26,342.71</u>	448,678.03
Contained in Deposits		<u>294,697.70</u>
TOTAL AMOUNT ON HAND		743,375.73

Respectfully submitted,

*Jack Hettich*  
Assistant Melter & Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Statement of Available Silver on hand, close of business, July 27, 1907.

	-----	
	Standard Ounces	
Fine Bars	351,982.85	
Quarter dollar ingots	182,209.30	
Clippings	<u>26,342.71</u>	560,534.86
		<u>297,256.99</u>
Contained in Deposits		857,791.85
TOTAL AMOUNT ON HAND		

Respectfully submitted,

*Joe W. Wilson*  
~~Assistant~~ Melter and Refiner.

U. S. MINT SERVICE.  
Form No. 210.  
Ed. Feb. 3-05-500.-8 x 10 1/2.

## MELTERS AND REFINERS OF BULLION BALANCES.

# Print of the United States at D E N V E R

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the Month of July, 1907.

**GOLD.**

[illegible]

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[illegible]

COPYRIGHT:

August 1

1907.

James M. Doornick  
Superintendent.

Staple article.

John H. Brown  
Middletown, N. H.

Heiter und froh

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Statement of Available Silver on Hand, close of business, August 3, 1907

	Standard Ounces	
Fine Bars	304,669.69	
U. S. Ingots	101,436.25	
Clippings	<u>81,889.18</u>	487,995.12
Contained in Deposits		<u>300,500.23</u>
TOTAL AMOUNT ON HAND		788,495.35

Respectfully submitted,

*J. H. Hestrich*

Acting Melter and Refiner.

Denver.

Melter &amp; Refiner's

July, 1907.

Adams, C.L.	14			Leave
Bartlett, H.D.	15	4		"
Boyle, J.R.	13	4		"
Bush, W.M.	14			"
Borstadt, G.	16	4		"
Chaffee, D.	14	2		"
Crary, J.H.	13	4		"
Dakin, C.W.	16	4		"
Gray, G.B.	16	4		"
Howard, M.	14			"
Morrison, R.C.	14	1	30	"
"	1	<del>1</del>	<del>30</del>	Sick
Pughe, J.F.	14			Leave
Quirk, M.J.	14			"
Schell, E.P.	14	1		"
Shields, B.G.	16	4		"
Smith, E.S.	14			"
Spencer, G.N.	13	4		"
St. John, F.	5	5		"
Stoddard, X.T.	13	4		"
Taggart, B.H.	18	2		"
Whitaker, S.R.	16	4		"
Whitehead, F.R.	16.			"
Winn, H.H.	14	4		"
Wirth, B.P.	13	4		"
Ketruck Jm.	6			"

## INGOT MELTING ROOM.

Standard ozs.

1. Amt. bullion melted, all silver		<u>511,895.58</u>
2. Amt. good ingots made: a. Mexican 50centavos		311,832.80
b. Quarter dollars		<u>173,847.15</u>
	Total	<u>485,679.95</u>
3. Cost of Ingots:	Total	Per ounce
a. Labor	930.86	.00191661
b. M. & R. Gen'l	378.33	.00077896
c. Mitts & gloves	17.25	.00003551
d. Crucibles	32.20	.00006629
e. Incidentals	35.13	.00007233
f. Fuel	84.70	.00017439
g. Power	17.55	.00003613
h. Light	35.41	.00007290
i. Repairs	26.35	.00005425
j. Vacation, sick-leave & holidays	<u>656.30</u>	<u>.00135130</u>
Totals	2214.08	.00455867
k. Alloy Copper	<u>200.84</u>	<u>.00041352</u>
Totals including Copper	2414.92	.00497224
4. New Equipment	<u>68.30</u>	
Total Expense	<u>2483.22</u>	
5. Per cent. good ingots made to amt. silver bullion melted,		.9487
6. Distribution of costs: a. Mexican 50-Centavos	1585.84	
b. Quarter dollars	<u>829.08</u>	<u>2414.92</u>

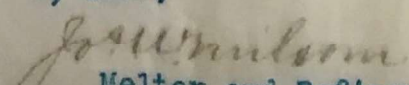
## REFINERY (Not operating)

a. New Equipment	149.79	
b. Sick-leave, vacation & holidays	<u>726.25</u>	<u>876.04</u>

## SWEEPS CELLAR (Not operating)

a. New Equipment	5.52	
b. Repairs	<u>4.50</u>	<u>10.02</u>

Respectfully submitted, August 9, 1907,

  
 Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Statement of Available Silver on hand, close of business, August 10,  
1907.

	Standard ounces	
Fine Bars	304,668.69	
Ingots	61,427.05	
Clippings	<u>94,813.38</u>	460,910.42
Contained in Deposits		<u>306,422.00</u>
TOTAL AMOUNT ON HAND		767,332.42

Respectfully submitted,

*J. W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 14, 1907.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver, Colo.

Sir:

I have the honor of recommending the promotion of Helper George B. Gray, to the position of Assistant Melter in the Refinery Melting room, at a compensation of \$4.00 per day; said promotion to be effective as soon as it is regularly approved.

We have recently suffered a loss of one of our best melters in this room, by the transfer of Jacob R. Boyle to the Philadelphia mint, and this promotion will enable us to get along with our work fairly well, for a time at least.

I also request authority to appoint an additional helper to fill the position made vacant by the above promotion.

Very respectfully,

*Joe W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 14, 1907.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver, Colo.

Sir:

I have the honor of recommending the promotion of Assistant Melter, Richard C. Morrison to the position of Foreman of the Ingot Melting room, to fill the vacancy that will occur in that position at the end of this month, by the transfer of Michael J. Quirk to the U. S. Mint at Philadelphia.

Mr. Morrison is a careful workman and fully competent to perform the duties that will devolve upon him in the new position, as he has always acted as foreman in the absence of Mr. Quirk. I therefore recommend that he be allowed the regular per diem pertaining to said foremanship, viz., \$5.00 per day, and that he assume the duties of said office upon the day following the retirement of Mr. Quirk.

Very respectfully,

*John Morrison*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 16<sup>th</sup>, 1907.

Hon. Frank M. Downer

Supt. U. S. Mint, Denver, Colo.

Dear Sir:

I have the honor of recommending that the compensation of Helper, E. P. Schell be increased from \$3.<sup>50</sup> per day to \$4.<sup>00</sup>.

Mr. Schell in addition to his work as helper in the Make-up room keeps a record of all supplies received for this department and personally attends to checking their receipt.

He is careful and painstaking in his work and I trust this may meet with your approval.

Very respectfully

Joseph Wilson  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Statement of Available Silver on hand, Close of Business, August 7,  
1907.

	Standard Ounces	
Fine Bars	152,895.29	
Ingots	244,035.13	
Clippings	<u>18,808.05</u>	415,738.47
Contained in Deposits		<u>314,058.42</u>
TOTAL AMOUNT ON HAND		729,796.89

Respectfully submitted,

*Joseph W. Milburn*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 24<sup>th</sup>, 1907.

Statement of available silver on hand at  
the close of business this day:

Fine bars	26265.44	
Ingot	<u>195667.08</u>	221932.52
Contained in deposits		<u>318487.02</u>
Total amount on hand		<u>540419.54</u>

Respectfully submitted

J. W. Wilson  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 31, 1907.

Statement of Available Silver on Hand at close of business this day.

	Standard ounces	
Fine bars	26,265.44	
Ingots	140,998.70	
Clippings	<u>24,068.25</u>	191,332.39
Contained in deposits		<u>328,043.44</u>
TOTAL AMOUNT ON HAND		519,375.83

Respectfully submitted,

*J. M. H. H. H.*  
Assistant Melter and Refiner.

## WEITERS AND REFINERS OF BULLION BALANCES.

# Deny the Right of the United States at

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Deliveries to the Superintendent of the Mint by him during the month of August, 1907.

**GOLD.**

[illegible]

**SILVER**

[illegible]

CORPOT

Frank M. Brown  
Superintendent.

Superintendent.

September 2, 1907.

Georg Meier und Rehner.

## M I N T

## D E N V E R

M. &amp; R.

August, 1907

Adams, C.L.	5	<del>4</del> <sup>5</sup>		Leave
Bartlett, H.D.	5	7		"
Borstadt, G.	5	6		"
Boyle, J.R.	3			"
Bush, W.M.	5	4		"
Chaffee, D.	5	4	30	"
"	2	4		Sick
Crory, J.H.	5	4		Leave
Dakin, C.W.	5	4		"
Gray, G.B.	5	4		"
Howard, M.	5	4		"
Morrison, R.C.	6			"
Pughe, J.F.	2	4	30	"
Quirk, M.J.	2	5		"
Schell, E.P.		2	30	"
Shields, B.G.	5	4		"
Spencer, G.N.	2	4		"
St. John, F.	9	4	30	"
Stoddard, X.T.	5	4		"
Taggart, B.H.	5	<del>4</del>		"
Whitaker, S.R.	8	2		"
Whitehead, H.R.	5	4		"
Wirth, B.P.	1	1		"

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

September 7, 1907.

Statement of Available Silver on Hand at close of business this day.

	Standard ounces	
Ingot	95,372.27	
Clippings, Kings, etc.	<u>21,803.27</u>	117,175.54
Contained in Deposits		<u>328,043.44</u>
TOTAL ON HAND		445,218.98

Respectfully submitted,

*John Wilson*  
Melter and Refiner.

August, 1907, report of the Melter and Refiner's Department, of the  
U. S. Mint, at Denver.

INGOT MELTING ROOM.

Standard ounces

1. Amount of bullion melted: a. Gold 139,766.25  
b. Silver 573,269.75  
Total 713,036.00

2. Amount good ingots made: a. Double eagles 133,769.97  
b. Half dollars 33,002.85  
c. Quarter dollars 520,722.80  
Total 687,495.62

3. Cost of Ingots:	Gold		Silver		Total	
	Total	Per oz.	Total	Per oz.	Total	Per oz.
a. Labor	195.15	.00145884	683.01	.00123348	878.16	.00127783
b. M. & R. Gen	46.30	.00034611	162.04	.00029263	208.34	.00030304
c. Mitts, glov.	9.00	.00006727	31.50	.00003688	40.50	.00005290
d. Crucibles	14.87	.00011116	52.05	.00009399	66.92	.00009733
e. Swp. Cellar	65.38	.00048874	228.84	.00041327	294.22	.00042795
f. Incidentals	20.68	.00015459	72.39	.00013073	93.07	.00013537
g. Fuel	33.83	.00025289	118.42	.00021386	152.25	.00022145
h. Power	9.07	.00006780	31.78	.00005735	40.83	.00005938
i. Light	1.63	.00001218	5.69	.00001027	7.32	.00001064
j. Repairs	5.54	.00004141	19.37	.00003498	24.91	.00003623
k. Vacation, s.l. & h.	38.43	.00028728	134.53	.00024295	172.96	.00025157
Totals	439.88	.00328833	1539.60	.00278043	1979.48	.00287926
#. Alloy Cop.	120.76	.00090274	327.79	.00059197	448.55	.00065244
Totals incl. Copper	560.64	.00419107	1867.39	.00337241	2428.03	.00353170

4. a. New Equipment 12.04  
b. Clipping silver bars for Gen. dept. 16.25  
Total Expense 2456.32

5. Per cent. good ingots made to amt. bullion melted, a. Gold, .9570  
b. Silver. 9659

6. Average cost per ounce of ingots for two months:

	Gold	Silver	Total
a. Excluding copper	.00314725	.00354471	.00349837
b. Including copper	.00401126	.00404392	.00404011

7. Cost distributed to denominations:

a. Double eagles	560.64
b. Half dollars	108.25
c. Quarter dollars	1759.14
Total	2428.03

## REFINERY.

1. Product: a. Gold  
b. Silver

Fine ounces  
33,915.03  
13,868.32

Std. Ounces  
37,883.37  
15,194.80

229

Totals 47,581.35 52,868.17

## 2. Costs:

Totals

cts. pr oz.

a. Labor	661.65	.012516
b. Crucibles, covers, & rings	36.00	.00068013
c. Acids	151.81	.00287148
d. Incidentals	49.75	.00094101
e. Mitts, gloves, aprons	16.32	.00030869
f. Chemicals	5.00	.00009457
g. Sweeps cellar	0.00	0
h. M. & R. Gen.	208.33	.00394055
i. Fuel	44.10	.00083415
j. Power	110.25	.00208537
k. Repairs	108.25	.00204754
l. Light	30.00	.00056744
m. Vacation, sick lv. & holidays	230.16	.00435347

Totals 1651.62 .03124034

3. a. New Equipment 178.80

b. Clipping silver bars  
    for Gen. dept. 17.81

Total Expense 1948.23

4. Crude bullion refined, approx., gross ozs. 60,245.86

5. Cost per crude ounce .02741466

6. " " standard " .03124034

7. " " fine " .03471149

## SWEEPS CELLAR

1. Product: a. Sweeps, avoir. lbs. 24,162  
b. Gold, std. ozs. 195.598  
c. Silver " 1272.590

2. Costs: a. Labor 184.38  
b. Power 38.94  
c. Repairs 3.00  
d. Light 10.00  
e. Incid'ls 38.53  
f. Vacation  
    etc. 17.87

Total 292.72

3. New Equipment 1.50  
Total 294.22

4. Tailings: a. Amount avoir. lbs. 24,162  
b. Contained gold, std. ozs, 52.527  
c. " silver " 435.440

5. Percentage of extraction: a. Gold, .788 Silver, .745

6. Department charged: Ingot Melting room.

Respectfully submitted, Sept. 10, 1907.

*J. C. Milson*  
Melting Room

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

September 11, 1907.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

I have the honor of hereby most earnestly recommending that the salary of Farnum St. John, clerk in my office, be increased from \$1400.00 per year to \$1600.00.

You no doubt remember that when I was considering the filling of this place in the fall of 1905, I was very strongly inclined to the belief that I could not secure a satisfactory appointee from the Civil Service Eligible list, and that I took the matter up with a member of the National Civil Service Commission, who happened to be in Denver at that time, in an effort to have this position excepted, so that I could select someone in every way competent to perform the many and varied duties required. In November, 1905, I presented the matter personally to the then Director of the Mint, Hon. Geo. E. Roberts, and, after a full discussion, he urged me to first try the eligible list, stating that, if I failed there, I might renew my application to make the position an excepted one. Later, the eligible list came to hand, and I discovered that Mr. St. John stood third in a list of, I think, over 700; I was very much pleased, as I had known him for a number of years, and I knew that in him was combined the special attainments I was so anxious to obtain in a con-

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 2

fidential clerk. Later, with your approval, he was appointed to the position which he has now filled so acceptably for nearly twenty months.

He is a splendid stenographer, a very rapid and accurate typewriter, a first-class accountant and calculator, and a neat and careful bookkeeper. He is so loyal to this institution and always so willing to work overtime, and even on Sundays, (for which he receives no additional pay), that it is a great pleasure for me to place on record my appreciation of his services, with the most earnest recommendation that the increase of salary asked for be granted.

Trusting that your personal knowledge of Mr. St. John's worthiness will assist you in reaching a favorable conclusion in the premises, I remain,

Respectfully yours,

*Joseph W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER DEPARTMENT,

September 21, 1907.

Statement of Available Silver on Hand, close of business this day.

	Standard Ounces	
Fine Silver	4936.00	
Ingot	23557.00	
Clippings	<u>1002.30</u>	29,495.30
Contained in Deposits		<u>287,519.06</u>
Total on Hand		317,014.36

Respectfully submitted,

*Joseph W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

September 27, 1907.

Statement of Available Silver on Hand, close of business this day.  
-----

	Standard ounces
Ingots	47,837.60
Contained in deposits	<u>304,801.71</u>
TOTAL ON HAND	352,639.31

Respectfully submitted,

*J. C. McLaughlin*  
Melter and Refiner.

U. S. MINT SERVICE.  
 OFFICE NO. 219  
 Ed. Feb. 4-06-500-8 x 10 1/2

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at DENVER

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the September, 1907.

GOLD.

Received	STANDARD OUNCES.				Delivered	STANDARD OUNCES.			
	1	206	460	642		206	909	120	
Balance		50	087	913	Ingots				
Contained in Gold Deposits		4	605	466	Bars, Fine				
Contained in Silver Deposits					Bars, Standard				
Contained in					Bars, Unparted				
Clippings, blanks, etc.		47	943	820	Bars		60	081	
			177	038	Sweeps				
Sweeps bar									
	1	308	274	879	Balance	1	101	305	678
					Sept. 29	1	308	274	879

SILVER.

Received	STANDARD OUNCES.				Delivered	STANDARD OUNCES.			
	1	519	375	65		307	102	20	
Balance		8	386	65	Ingots				
Contained in Gold Deposits		23	207	18	Bars, Fine				
Contained in Silver Deposits			67	43	Bars, Standard				
Contained in					Bars, Unparted				
Clippings, blanks, etc.		115	480	25	Bars		588	34	
		20	288	55	Sweeps				
Sweeps bar									
Con'd coin									
spj. Mex.									
coin			18	58					
coiner's bars		3	523	95	Balance		352	657	88
		690	348	42	Sept. 29		690	348	42

October 1

1907

Frank M. Brown

Superintendent

Melter and Refiner

I I N U

Denver

Melter &amp; Refiner's

, September,

Crary, J.H.		1	30	Leave
Dakin, C.W.		1		"
Gray, C.B.		3	30	"
O'Brian, W.S.	2	4		"
Pughe, J.F.		5		"
Schell, E.P.	14			"
"	4	4		Without pay
Shields, B.G.	3			Sick
"		1	30	Leave
Smith, E.S.	2			"
St. John, F.	2	1	30	"
Stoddard, X.T.		1		"
Wirth, E.P.		1		"

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

October 5, 1907.

Statement of Available Silver on hand at close of business this day.

	Standard ounces	
Fine Silver	20,081.78	
Ingots	<u>47,837.60</u>	67,919.38
Contained in Deposits		<u>288,924.11</u>
Total on hand		356,843.49

Respectfully submitted,

*John H. McArthur*  
Melter and Refiner.

September, 1907, report of the M. & R. Department of the U. S. Mint, at  
Denver, Colo.

# INGOT MELTING ROOM

Standard ounces

1. Amount of bullion melted: a. Gold 277,486.79  
b. Silver 260,779.65  
Total 538,266.44

2. Amount of good ingots made: a. Double Eagles 242,019.28  
b. Dimes 246,592.70  
Total 488,611.98

3. Cost of Ingots:	Gold		Silver		Total	
	Total	Per oz.	Total	Per oz.	Total	Per oz.
a. Labor	337.52	.00139459	337.52	.00136373	675.04	.00138154
b. M. & R. Gen.	104.17	.00043042	104.17	.00042143	208.34	.00042639
c. Mitts, gloves	12.25	.00005061	10.12	.00004103	22.37	.00004578
d. Crucibles	30.12	.00012445	27.60	.00011192	57.72	.00011813
e. Sweeps Cel.	65.11	.00026902	65.11	.00026403	130.22	.00026651
f. Incidentals	25.67	.00010606	30.25	.00012337	55.92	.00011444
g. Fuel	59.50	.00024584	55.30	.00022425	114.80	.00023495
h. Power	17.85	.00007375	17.85	.00007338	35.70	.00007306
i. Light	3.16	.00001305	3.16	.00001331	6.32	.00001293
j. Repairs	42.39	.00017515	42.39	.00017100	84.78	.00017351
k. Sick-leave, vacation, &c	44.64	.00018453	44.65	.00018106	89.29	.00018274
Totals	742.38	.00306744	738.12	.00299327	1480.50	.00303001
l. Alloy cop.	341.70	.00141187	169.27	.00068643	510.97	.00104575
Totals in- cluding Cop.	1084.08	.00447931	907.39	.00367971	1991.47	.00407576

4. New Equipment

Total Expense 5.95  
1997.42

5. Per cent. good ingots made to amt. bullion melted: a. Gold, .8721  
b. Silver, .9455

6. Average cost per ounce of ingots for three months:

	Gold	Silver	Total
a. Excluding alloy copper	.00309660	.00344056	.00336874
b. Including " "	.00430796	.00397512	.00415043

7. Cost distributed to denominations:

a. Double Eagles 1084.08  
b. Dimes 907.39  
Total 1991.47

## REFINERY

1. Product:	a. Gold	Fine Ozs.	Std. Ozs.
	b. Silver	150,456.243	167,173.603
		103,635.900	115,151.000
	Totals	254,092.143	282,324.603

2. Costs:	Totals	Cents per ounce
a. Labor	1420.92	.00503293
b. Crucibles, covers, rings	80.60	.00028548
c. Acids	424.68	.00150482
d. Incidentals	141.25	.00050031
e. Mitts, gloves, aprons	73.37	.00025987
f. Chemicals	25.00	.00008855
g. Sweeps cellar	0.00	.00000000
h. M. & R. Genl.	208.33	.00073790
i. Fuel	139.30	.00049340
j. Power	331.87	.00117549
k. Repairs	132.65	.00046984
l. Light	55.00	.00019481
m. Vacation, sick-leave & holidays	170.67	.00060451
	Totals	.01134736
3. New Equipment	79.31	
Total Expense	3282.95	

4. Crude bullion refined, approx.,		349,497.160
5. Cost per crude ounce	.00916642	
6. " " std. "	.01134736	
7. " " fine "	.01260818	

## SWEEPS CELLAR

1. Product:	a. Gold, standard ounces	31.470	
	b. Silver "	452.390	
	c. Tailings, avoird. lbs.		5,775

2. Costs:	a. Labor	78.50	
	b. Power	8.72	
	c. Repairs	.50	
	d. Light	20.00	
	e. Vacation, etc.	22.50	
	Total expense	130.22	
3. Tailings:	a. Amount avoird. Lbs.	5,775	
	b. Contained gold, std. ozs.	7.539	
	c. " silver "	152.940	

4. Percentage of extraction:	a. Gold, .8067; Silver, .7473
5. Department charged:	Ingot melting room.

Respectfully submitted, October 9th, 1907,

*Joel Winborn*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

October 12, 1907.

Statement of Available Silver on hand at close of business this day.

	-----	
	Standard ounces	
Fine Silver	34,472.16	
Clippings	<u>21,695.85</u>	56,168.01
Contained in deposits		<u>280,376.63</u>
Total on hand		336,544.64

Respectfully submitted,

*J. H. Bennett*  
Assistant Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver, October 19, 1907.

Statement of Available Silver on Hand at close of business, this day.

	standard ounces	
Silver ingots	28,275.95	
Fine Silver	<u>4,401.38</u>	32,677.33
Contained in Deposits		<u>283,418.98</u>
TOTAL ON HAND	<u>-----</u>	316,096.31

Respectfully submitted,

*John H. Betts*  
Acting Melter & Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

October 6, 1907.

Statement of Available Silver on hand at close of business this day:

	Standard ounces
Fine silver	19,616.55
Contained in deposits	<u>268,646.61</u>
Total on hand	288,263.16

Respectfully submitted,

*J. W. Milson*  
Melter and Refiner.

Print of the United States at D E N V E R

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of October, 1907.

**GOLD.**

STANDARD OUNCES.				STANDARD OUNCES.			
Received				Delivered			
	Oct. 1	19					
Balance	1	101	305 678	Ingots		704	364 420
Contained in Gold Deposits		49	502 090	Bars, Fine			
Contained in Silver Deposits		4	879 651	Bars, Standard			
Contained in				Bars, Unparted			
Clippings, blanks, etc.		260	793 290	Bars			
				Sweeps			
Balance	Oct. 31, 1907	19				712	116 889
		1	416			416	480 709

**SILVER.**

[illegible]

**CORRECT:**

*Superintendent.*

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Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

November 2, 1907.

Statement of Silver on Hand at close of business this day:

	----- Standard ounces
Silver ingots	17,647.15
Contained in deposits	<u>271,104.76</u>
TOTAL ON HAND	288,751.91

Respectfully,

*Joseph Milam*

Melter and Refiner.

Melter and Refiner's

October, 1907.

Adams, O.L.			30	Leave
Crary, J.H.			45	"
Howard, M.	6			"
Pughe, J.F.	2		15	"
Shields, B.G.		1		"
"	4			Sick
Schell, E.P.		2		Without pay
Smith, E.S.	3	2		Leave
"		3		Without pay
Spencer, G.N.		3	30	Leave
Stoddard, X.T.	1			"
St. John, F.	2	1		"
Whitehead, H.R.		3	30	"
Wirth, B.P.		6	30	"
Taggart, B.H.			30	"

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

November 9, 1907.

Statement of Silver on hand at close of business this day:

	----- Standard ounces
Ingots	24,113.65
Fine Silver	7,813.10
Contained in Deposits	<u>268,058.04</u>
Total on hand	299,984.79

Respectfully submitted,

*Benjamin Wilson*  
Melter & Refiner.

## REFINERY

		Fine ozs.	Standard ozs.
1. Product:	a. Gold	140,102.902	155,669.891
	b. Silver	174,145.113	193,494.570
	Total	<u>314,248.015</u>	<u>349,164.461</u>

2. Costs:	Totals	Cost per oz.
a. Labor	\$1630.03	.00466837
b. Crucibles, covers, rings	75.80	.00021708
c. Acids	542.19	.00155292
d. Incidentals	199.47	.00057137
e. Mitts, gloves, aprons	72.18	.00020572
f. Chemicals,	25.00	.00007159
g. Sweeps Cellar	118.45	.00033923
h. M. & R. Gen.	208.33	.00059365
i. Fuel	183.40	.00052555
j. Power	601.55	.00172282
k. Repairs	75.32	.00021571
l. Light	75.00	.00021479
m. Vacation, sick leave & holidays	<u>35.14</u>	<u>.00010064</u>
Totals	3841.86	.01100300

3. New Equipment

274.37Total Expense \$4116.23

4. Crude bullion refined, approx. 468,392.340 gross ozs.

5. Cost per crude ounce, .00082022

6. " " standard " .01100300

7. " " fine " .01222556

## SWEEPS CELLAR

1. Product: Tailings, avoir. lbs. 4300  
Amalgam not retorted.

2. Costs:	a. Labor	\$66.87
	b. Power	6.39
	c. Light	20.00
	d. Repairs	7.13
	e. Incidentals	1.43
	f. Sick leave &c	<u>16.63</u>

Total \$118.45 charged to Refinery

3. New Equipment

\$35.31

## INGOT MELTING ROOM

1. Amount of bullion melted:	a. Gold	Standard ozs.
	b. Silver	617,824.81
	Total	95,563.40
		<u>713,388.21</u>

2. Amount of good ingots made:	a. Double Eagles	559,864.95
	b. Dimes	93,869.15
	Total	<u>653,734.10</u>

## 3. Cost of Ingots:

	Gold		Silver		Total	
	Total	Per oz.	Total	Per oz.	Total	Per oz.
a. Labor	723.91	.00129300	137.25	.00146214	861.16	.00131722
b. M. & R. Gen.	166.67	.00029769	41.66	.00044380	208.33	.00031860
c. Mitts, gloves	4.87	.00000869	6.50	.00006924	11.37	.00001732
d. Crucibles	59.40	.00010609	9.20	.00009800	68.60	.00010490
e. Sweeps, Cellar	.00	.00	.00	.00	.00	.00
f. Incidentals	42.81	.00007646	11.64	.00012400	54.45	.00008322
g. Fuel	137.20	.00024505	24.15	.00025727	161.35	.00024688
h. Power	36.00	.00006430	8.99	.00009577	44.99	.00006888
i. Light	6.32	.00001128	1.58	.00001683	7.90	.00001200
j. Repairs	34.61	.00006181	8.65	.00009214	43.26	.00006611
k. Sick leave &c	25.29	.00004517	6.32	.00006732	31.61	.00004831

Totals	1237.08	.00220960	255.94	.00272656	1493.02	.00228385
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1. Alloy Cop.	557.77	.00099625	108.22	.00115288	665.99	.00101874
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Totals incl.

Copper	1794.85	.00320586	364.16	.00387944	2159.01	.00330250
--------	---------	-----------	--------	-----------	---------	-----------

## 4. New Equipment

32.92Total Expense\$2191.93

## 5. Per cent. of good ingots made to amount of bullion melted:

a. Gold, .906

b. Silver, .982

## 6. Average cost of ingots, per ounce, for four months:

	Gold	Silver	Total
a. Excluding alloy copper	.00256925	.00339266	.00306146
b. Including " "	.00365270	.00396871	.00384160

## 7. Cost distributed to denominations:

a. Double Eagles \$1794.85

b. Dimes 364.16

Total

\$2159.01

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

November 16, 1907.

Statement of Silver on Hand at close of business this day:

	Standard ounces	
Ingots	45,069.20	
Fine Silver	<u>235,607.92</u>	280,677.12
Contained in Deposits		<u>273,366.29</u>
Total on hand		554,043.41

Respectfully submitted,

*J. W. M. Wilson*  
Melter and Refiner.

Denver.

## Melter and Refiner's

Nov., 1907.

Adams, O.L.	✓		2		Lea
Arnold, R.G.	✓	1			"
Bartlett, H.D.	✓		1		"
Chaffee, D.	✓		3		"
Dakin, C.W.	✓	1	3	30	"
Dardis, W.N.	✓		1		"
O'Brian, W.S.	✓	4			"
Pughe, J.F.	✓	1	6	30	"
Spencer, G.N.	✓		3	30	"
St. John, F.	✓		2		"
Stoddard, X.T.	✓		7		"
Taggart, B.G.	✓	9			Sick
Whitehead, H.R.	✓	1	3		Leave

U. S. MINT SERVICE.  
Form No. 319.  
Ed. Feb. 3-05-300-8 x 10 1/4.

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at

D E N V E R

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of November, 1907.

GOLD.

Received	Balance	Nov. 1 19	STANDARD OUNCES.			Delivered	Nov. 30, 1907	19	STANDARD OUNCES.		
			712	116	289	Ingots	523	797	750		
Contained in Gold Deposits			59	669	934	Bars, Fine					
Contained in Silver Deposits			4	965	353	Bars, Standard					
Contained in			117	326	150	Bars, Unparted					
Clippings, blanks, etc.			5	310	990	Bars					
Gold coin						Sweeps					
			890	888	716	Balance	576	090	966		
							899	888	716		

SILVER.

			STANDARD OUNCES.						STANDARD OUNCES.		
						Delivered					
Received		NOV. 1 19	305	669	16	Ingots			541	652	50
Balance			7	634	91	Bars, Fine					
Contained in Gold Deposits			19	648	69	Bars, Standard					
Contained in Silver Deposits			666	108	47	Bars, Unparted					
Contained in	Fine bars		138	743	15	Bars					
Clippings, blanks, etc.			31	984	25	Sweeps					
Con'd coin											
			1169	788	63	Balance	NOV. 30, 1907	19	628	136	15
									1169	788	63

CORRECT:

December 3

1907.

Melter and Refiner.

Superintendent.

# REFINERY

		Fine ozs.	Standard ozs.
1. Product:	a. Gold	173,313.623	198,870.884
	b. Silver	155,657.373	172,942.610
	Total	<u>328,971.000</u>	<u>371,813.494</u>
2. Costs:		Totals	Cost per oz.
	a. Labor	1520.83	.00416067
	b. Crucibles, covers		
	rings	103.20	.00028233
	c. Acids	487.96	.00133496
	d. Incidentals	202.33	.00055355
	e. Mitts, gloves,		
	aprons	48.45	.00013254
	f. Chemicals	20.00	.00005471
	g. Sweep cellar	77.78	.00021279
	h. M. & R. Gen'l	208.34	.00056997
	i. Fuel	181.65	.00049695
	j. Power	643.33	.00178062
	k. Repairs	154.51	.00042270
	l. Light & Vent.	110.00	.00030093
	m. Sick leave &c	50.00	.00013679
	Totals	<u>3808.38</u>	<u>.01041897</u>
3. New Equipment		<u>231.02</u>	
Total Expense		<u>\$4039.40</u>	
4. Crude bullion refined, approximately,		449,883.50	ozs.
5. Cost per crude ounce,		.00846525	
6. " " standard "		.01041897	
7. " " fine "		.01157664	

## SWEEPS CELLAR

1. Product:	a. Gold, standard ozs.	134.064	
	b. Silver " "	212.730	
	c. Tailings, avoird. lbs.,		12,603
2. Costs:			
	a. Labor	85.75	
	b. Power	9.96	
	c. Repairs	6.20	
	d. Light	10.00	
	e. Incidentals	6.75	
	Total Expense	<u>118.66</u>	
3. Tailings:			
	a. Amount avoird. lbs.	12,603	
	b. Contained gold,	39.716	
	c. " silver	168.300	
4. Percentage of extraction:			
	a. Gold	.771	
	b. Silver	.518	
5. Departments charged as follows:			
	a. Refinery,	77.78	
	b. Ingot melting room	40.88	

## INGOT MELTING ROOM

1. Amt. of bullion melted:		a. Gold,	Standard ozs.
		b. Silver,	354,534.14
		Total	615,861.75
			<u>970,395.89</u>
2. Amt. of good ingots:		a. Double eagles	330,819.39
		b. Half eagles	5,115.39
		c. Half dollars	567,196.85
		d. Dimes	11,692.75
		Total	<u>914,824.38</u>

	Gold		Silver		Total	
	Total	Per oz.	Total	Per oz.	Total	Per oz.
a. Labor	540.11	.00101242	676.70	.00116896	1016.81	.00111148
b. M. & R. Gen'l	56.28	.00016753	152.05	.00026265	208.33	.00022772
c. Mitts, gloves	11.12	.00003310	32.00	.00005527	43.12	.00004713
d. Crucibles	26.36	.00007846	49.80	.00008602	76.16	.00008325
e. Sweeps Cellar	11.05	.00003289	29.83	.00005152	40.88	.00004468
f. Incidentals	31.88	.00009489	49.63	.00008573	81.51	.00008909
g. Fuel	85.40	.00025421	113.05	.00019528	198.45	.00021692
h. Power	19.05	.00005670	51.48	.00008892	70.53	.00007709
i. Light & Vent.	11.32	.00003369	30.58	.00005282	41.90	.00004580
j. Repairs	18.62	.00005542	50.30	.00008689	68.92	.00007533
k. Sick leave &c	6.08	.00001809	16.42	.00002836	22.50	.00002459
Totals	617.27	.00163746	1251.84	.00216248	1869.11	.00204313
1. Alloy Cop'r	416.47	.00124568	795.87	.00137482	1214.34	.00132740
Totals incl.						
Alloy Copper	1035.74	.00302315	2047.71	.00353730	3083.45	.00337053
					29.88	

4. New Equipment

3113.33

Total Expense

5. Percentage of good ingots to amt. bullion melted: a. Gold, 94.75  
b. Silver, 93.99

6. Average cost of ingots per ounce for five months:

	Gold	Silver	Total
a. Excluding Alloy copper	.00237683	.00303269	.00277533
b. Including " "	.00350294	.00384247	.00370924

7. Cost distributed to denominations:

a. Double eagles,	1015.56
b. Half eagles	20.18
c. Half dollars	1007.82
d. Dimes	39.89

Total

\$3083.45

M I N T

D E N V E R

December, 1907

Melter &amp; Refiner's

Adams, O.L.	1		Leave
Arnold, R.G.	4		"
Bush, W.M.	5		"
	2		"
Crary, J.H.			"
Dakin, C.W.	1		"
	5		"
Dardis, W.N.	1		"
Howard, M.			"
	1	6	"
Pughe, J.F.			"
	1		"
Shields, B.G.			"
	2	1	"
Spencer, G.N.		5	"
St. John, F.		4	"
Stoddard, X.T.			"
	1	30	"
Wirth, B.P.			

**MELTERS AND REFINERS OF BULLION BALANCES.**

## Print of the United States at D E N V E R

*Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of December, 1907.*

**GOLD.**

STANDARD OUNCES.			STANDARD OUNCES.		
Received			Delivered		
Balance	Dec. 1	19	Ingots		
Contained in Gold Deposits		576	Bars, Fine		
Contained in Silver Deposits		59	Bars, Standard		
Contained in		5	Bars, Unparted		
Clippings, blanks, etc.		138	Bars		
		828	Sweeps		
Supt. Sweeps		113			
		365			
			Balance	Dec. 31, 1907	19
		640			640
		967			967
		265			265

SILVER

STANDARD OUNCES.				STANDARD OUNCES.			
Received				Delivered			
Balance	Dec. 1	628	136	Ingots	1	839	534
Contained in Gold Deposits		8	106	Bars, Fine			60
Contained in Silver Deposits		21	375	Bars, Standard			
Contained in	Fine bars	446	231	Bars, Unparted			
Clippings, blanks, etc.		442	127	Bars			
		103	523	Sweeps			
	Con'd coin		77				
	Supt. Sweeps		47				
			76				
		2	649	Balance	Dec. 31, 1907.	19	
						2	810
						649	103
							16
							78

### CONTRACT:

January 3, 1908.

Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

January 4, 1908.

Hon. Frank M. Damer,  
Superintendent U.S.Mint,  
Denver.

Sir:

I have the honor, as well as the very great pleasure, of informing you that in the month of December, 1907, the Ingot Melting room produced 1,880,194.65 standard ounces of silver half dollar ingots, without having any metal remelted or condemned.

This indicates not only exceptional ability, but extraordinary care on the part of the Make-up and Ingot Melting room forces, to whom the credit for the above favorable showing is due.

Respectfully,

*J. W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER.

MELTER AND REFINER'S DEPARTMENT.

January 7, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

I have the honor of directing your attention to a matter of vital importance regarding our Sweeps cellar. I understand the contract recently awarded to Wm. Duthie to make an inside entrance from the Mint building to the Sweeps cellar includes also the closing up of the alley-way entrance at the south end of the Sweeps cellar. This alley-way entrance was originally designed for the purpose of placing therein a small hoist or elevator to raise the tailings from the Sweeps cellar up to the alley-way for loading into the wagons for shipment, as well as for the purpose of ventilation. The hoist has never been installed, and so we have had to carry all the tailings up two flights of steps to reach the wagons. However, said alley-way entrance has been a very important factor in our operations in the Sweeps cellar as a ventilator; we dry all our tailings on a steam drier and under the most favorable conditions obtaining at present it is far from being a pleasant place to work in, as we only have one other opening, and that is at the southeast corner, the entrance door. Some time ago, I recommended that a grille be placed across the face of the archway forming the entrance to said alley-way opening as a measure of safety, and I now renew said recommendation, and very

## MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Downer - 2

earnestly protest against the closing of said alley-way opening, or making any change thereof, other than the placing of said grille.

I also recommend the installation of said elevator so as to do away with the laborious and expensive carrying by hand of the tailings up two flights of stairs to the alley.

On at least two previous occasions I have recommended certain changes in the Sweeps cellar, regarding which no action has been taken, and it seems proper for me to refer to them in this communication. The size of our Sweeps cellar is 37 by 44 feet, with six concrete pillars each two feet square supporting the roof, and the lighting of the room is entirely by artificial means, as daylight cannot enter anywhere. This room is not large enough for our purposes, in fact not large enough to complete the installation of our equipment, and until we get more space it would be very difficult to install the concentrating table necessary to complete our system of extraction.

I recommend that the Sweeps cellar be extended in length to the North twenty feet; and that the present dirt roof be entirely discarded and be replaced by a suitable concrete arch roof, with the necessary provision for light and ventilation. And if the roof cannot for any reason be changed in the near future, then six-inch iron columns should be substituted for the large concrete pillars.

The inside passage-way, now under contract, is of such a nature that it can be used for the passage of the employees, but

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Downer - 3

not for the transportation of sweeps, as there are two flights of steps to go down, one at the exit of the main building and the other at the entrance to the Sweeps cellar. My idea was to have said passage-way extend due west from its exit in the main building to the west line of the Sweeps cellar and then turn south along the west wall (extended) of the Sweeps cellar a distance of 22 feet, thus giving us a distance of 76 feet in which to drop 7 feet, which would permit of the passage-way being built without any steps, and on such a grade that we could easily truck down the sweeps from the main building, which would be quite sufficient as the tailings would be removed by the alley-way exit.

Trusting that I have made my views clear in a general way, and assuring you that it will be a pleasure to present the whole matter in detail if desired, I remain,

Respectfully yours,

*Joel W. Milson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

January 7, 1908.

Hon Frank M. Iowner,  
Superintendent, U. S. Mint,  
Denver.

sr:

I have the honor of calling your attention to our very great need of more help in the Ingot melting room. Our Sweeps cellar has been closed down since November because we did not have sufficient help to run it, on account of temporarily transferring our Sweeps cellar force to the Ingot melting room. Our sweeps have accumulated to such an extent that it becomes imperatively necessary to again operate the Sweeps cellar. This requires the taking away from the Ingot melting room of two men, but the Foreman informs me that he will try and if possible do the work if I can get him another man. I therefore most earnestly recommend the immediate appointment of a helper to work in the Ingot melting room.

Very respectfully,

*Joe W. Milburn*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

January 8, 1908.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

Supplementing my communication of yesterday regarding the appointment of an additional helper to work in the Ingot melting room, I now recommend the temporary appointment of Joseph H. Spencer to said position. I further recommend that such appointment become effective on the 9th instant.

Respectfully,

*Joseph H. Spencer*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

January 8, 1908.

Mr. Charles M. Gorham,  
Melter and Refiner, U. S. Mint,  
San Francisco, Cal.

My dear Sir:

The many happenings incident to the holiday season have delayed my answer to your communication of December 24th, 1907, regarding matters incident to the make-up of melts for your new Refinery.

The gross weight of our anode melts for the Refinery run as follows: Gold anodes from 5500 to 6000 ounces, and Silver anodes from 4400 to 4600 ounces.

We cannot make a general average of fineness of the crude bullion on hand for the purpose of making up anode melts, because the average would probably never be the necessary mixture for the work. Our method is as follows: We enter all our receipts in a book known as the "Melter and Refiner's Register of Bullion Deposits received," (copy enclosed), and we select from said record the deposit bars we believe necessary for the make-up of the desired gold or silver anode melts; however, if the necessary calculations determine that the melt is not of the proper proportions, it then becomes necessary to strike out a bar or two and substitute others containing more or less gold, silver, or base, so as to make the desired percentage of each metal. When the melt is completed as above (on paper), we select the deposits

## MINT OF THE UNITED STATES AT DENVER,

## MELTER AND REFINER'S DEPARTMENT,

Corham - 2

from the vault shelves by number, put them together in a box with a slip on which is written the melt number, the numbers of bars and the percentage contents of the mass in gold, silver and base; the foreman of the Refinery checks the weight as shown on the make-up sheet as the melt is weighed to him, and gives a receipt therefor, and the same is then charged to the Refinery.

The silver anode melts are somewhat easier to make up, because the nature of our deposits is such that we make very few silver anode melts exclusively from deposits; that is, we are required usually to add "refinery silver" to the melts; and in such cases we select deposit bars containing the proper percentage of gold and base and then add to the silver a sufficient amount from the Refinery to make the necessary percentage. I think I should explain what I mean by "refinery silver" in the preceding paragraph: We strip off most of the silver from our silver anodes in granular form, and when we find a cathode that will not let go of its silver we melt it in the Refinery melting room for fine silver bar or cathode purposes. But the granular silver is just the thing to help make up the silver melts, because it is very compact, an ordinary ingot box holding about 2200 ounces, and it is so easily divided for weight-making purposes. When we have the silver anode melts made up ready for the additional silver, we notify the foreman of the Refinery of the amount of silver necessary, and when he comes down to get the melts, he brings the granular silver with him, and it is then weighed up with

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Gorham - 3

bars to complete the make-up of the melts. The Refinery is neither credited or charged with said granular silver, but an account of it is kept for the purpose of determining the production of the Refinery.

Our gold anode melts run in fineness of gold from 900 up; silver should not exceed 20 parts, and the balance base.

The silver anode melts run from 320 gold and 600 silver to 390 gold and 550 silver, the balance base; however, our best results are obtained by keeping the gold up to not less than 350.

I enclose herewith copy of part of page 8 of M. & R. Register of Gold Deposits (the register of silver deposits is same form): copies of six make-ups of anode melts, being "Gold Anode Melts," Nos. 258, 59, and 61, and "Silver Anode Melts," Nos. 183, 190, and 193, which are exact copies of actual work and are self-explanatory.

We have not succeeded in securing any ruled books from the Mint Bureau to fit this work, and so we get the blank books and do the necessary ruling ourselves.

We have not discovered any short way of making the original calculations for this work, but we do our checking on a "Millionaire Calculating Machine" which helps some.

I believe this fully covers your inquiries, but if it does not or if you think of anything else, don't fail to ask for it, as we will be only too glad to give you the full benefit of our experience.

Very truly yours,

*Joseph H. Williams*  
Melter and Refiner.

## REFINERY

		<u>Fine Ounces</u>	<u>Standard ounces</u>
1. Product:	a. Gold	107,522.529	119,469.477
	b. Silver	145,990.494	162,211.660
	Total	253,513.023	281,681.137

2. Costs:	Totals	Cost per oz.
a. Labor	1322.27	.00469420
b. Crucibles, covers		
rings	103.10	.00036601
c. Acids	436.21	.00154859
d. Incidentals	269.19	.00095565
e. Mitts, gloves,		
Aprons	45.20	.00016046
f. Chemicals	20.00	.00007100
g. Sweeps cellar	.00	.00000000
h. M. & R. Gen'l	192.36	.00068289
i. Fuel	177.10	.00062872
j. Power	452.97	.00160809
k. Repairs	105.07	.00037301
l. Light & Vent'l'n	149.95	.00053233
m. Sick leave &		
holidays	138.40	.00049133
Totals	3411.82	.01211234

3. New Equipment	43.70
Total Expense	<u>\$3455.52</u>

4. Crude bullion refined, approximately,	361,483.48
5. Cost per crude ounce	.00943838
6. " " standard "	.01211234
7. " " fine "	.01345816

-----

SWEEP CELLAR not operating.

# INGOT MELTING ROOM

1. Amount of bullion melted, all silver, standard ounces, 1904, 405.66
2. " " good ingots, all half dollars " " 1880, 194.65

## 3. Cost of Ingots:

	Total	Silver	Per ounce
a. Labor	1908.57		.00101509
b. M. & R. General	192.37		.00010231
c. Mitts & gloves	70.62		.00003755
d. Crucibles	221.64		.00011788
e. Sweeps cellar	0.00		.00000000
f. Incidentals	147.67		.00007853
g. Fuel	366.80		.00019508
h. Power	81.93		.00004357
i. Light & Ventilation	74.97		.00003987
j. Repairs	98.66		.00005247
k. Sick leave and holidays	208.35		.00011081
Totals	3371.58		.00179320
1. Alloy copper	2525.25		.00134307
Totals including alloy			
copper (@ 27-3/4¢ per lb.)	5896.83		.00313628

## 4. New Equipment

339.35

## Total expense

\$6236.18

5. Percentage of good ingots to amount of bullion melted, 98.7

## 6. Average cost of ingots per ounce for six months:

	Gold	Silver	Total
a. Excluding alloy copper	.00237683	.00242870	.00241580
b. Including " "	.00350294	.00349834	.00349949

The above percentage of good ingots is the largest that can be obtained unless the tops are excluded from the calculation, in which event the percentage for this month would be 99.89.

During the month we did not have an ingot remelted or condemned.  
Query:- Should the tops be excluded from the calculations? How is it in the othermints?

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

January 15, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

I have the honor of presenting the following facts relative to the number of employees in the Melter and Refiner's department, showing the inadequacy of our present force, and making certain recommendations with reference thereto:

We originally got our Refinery under way, gold cells only, with a foreman, two melters, two cell men, and seven helpers; of the latter, four worked nights, two on each shift, which left us but three day helpers for both refinery and melting room. Some time later we secured another melter from the Deposit melting room. Recognizing our need for more help, about January 1, 1907, you detailed O'Brian and Arnold, General department helpers, to this department, and they were placed in the Refinery where they have remained to the present time, with the exception of last May, June, and July, when the Refinery was closed down. The transfer of Mr. Boyle to Philadelphia reduced the number of our melters, but that was promptly met by the promotion of a competent helper to the position of assistant melter, and the helper vacancy was covered by your detail of Dardis, another General department helper, to the Refinery.

Whenever there has been any extra work required in the Ingot room, we have had to secure the additional help from the Refinery

## MINT OF THE UNITED STATES AT DENVER,

Downer - 2

## MELTER AND REFINER'S DEPARTMENT.

or Sweeps cellar, and in the latter part of November, when you directed us to push our ingot work to the limit, it necessitated the transfer of one melter and three helpers from the Refinery to the Ingot room, and they are still working in said Ingot room.

In August, 1907, we commenced the regular operation of all our silver cells, which, on account of the smallness of our force, caused <sup>us</sup> to cut out some of our gold cells; but this was not detrimental to our general Refinery work, because the amount of gold bullion on hand that could be used in the gold cells direct, that is, without first passing through the silver cells, was very limited. When the rush on silver began in the latter part of November, we reduced the number of our gold cells to eight, that number being sufficient to take care of all the gold product of our silver cells. However, owing to the number of men transferred to the Ingot room, it became absolutely necessary to work the refinery day force of six men two hours overtime each day in the Refinery melting room, so as to keep up with our work; those conditions still exist, and it is all we can possibly do to keep going; in fact, if one man gets sick, it is necessary for us to work some other man a double shift, sixteen hours, as we have done several times during the last month. The General department helpers, O'Brian, Arnold, and Dardis whom you detailed to our department are all careful and willing workers, who, I think, should remain permanently in the Melter and Refiner's department and receive the same compensation as do others performing like services.

In the Ingot melting room we started work with a foreman, two

MINT OF THE UNITED STATES AT DENVER,

Downer - 3

MELTER AND REFINER'S DEPARTMENT,

melters, and two helpers, and later you transferred to us another melter from the Deposit melting room; but this did not permanently increase our force as Mr. Quirk, the foreman, was transferred to the Mint at Philadelphia, again reducing us to our original force of five men, and that is our regular<sup>force</sup> in that room at the present time, not counting, of course, your temporary appointment of Jos. Spencer on the 6th inst. During the recent rush on silver, we augmented this force by the addition of one melter and three helpers from the Refinery and two men from the Sweeps cellar on week days, and on six Sundays we increased that by two more melters and two helpers from the Refinery melting room.

This arrangement procured the amount of ingots you desired, but closed down the Sweeps cellar which has been entirely out of commission at least four months during 1907 because we did not have the men to run it. Our accumulation of sweeps is very large at the present time, and it will take continuous pushing work to dispose of them and what accumulates in the meantime, before settlement. I am very strongly of the opinion that the Sweeps cellar should work constantly so that we can keep up with a knowledge of the conditions as well as losses in the Refinery and Ingot melting rooms, and also because we always obtain our best results from Sweeps cellar operations when they are not overcrowded.

In addition to the foregoing, we have had a reverberatory furnace in the building for many months, but as we could not possibly spare the men to erect it, it is still out of commission. I am very anxious to have it installed as soon as possible, so that

## MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT.

Downer - 4

we can treat our base copper from the Refinery and get the gold out of it, and thus avoid the necessity of again passing up to Settlement Commission base copper bars containing such a small portion of gold -- 15 to 30 points.

I have always been and am now in hearty accord with you as to the centering of our force at the point of emergency and thus avoiding temporary appointments which must be revoked as soon as the emergency passes; but the force in this department is so small that any absence causes embarrassment, and as we cannot prevent either sickness or accidents, not to mention other causes of enforced absences, I am firmly convinced that it would be a wise economy to make such additions to our force as would at least under ordinary circumstances remove the harassment incident to the shortage of help which so frequently occurs.

I therefore most earnestly recommend:

First. That General department helpers William S. O'Brian, Robert G. Arnold, and William N. Dardis be permanently transferred to the Melter and Refiner's department, at a compensation of \$3.25 per day.

Second. That the Melter and Refiner's department be furnished with one additional helper for the Refinery, at \$3.25 per day.

Third. That the Melter and Refiner's department be furnished with one additional helper for the Ingot room, at \$3.25 per day, and, in addition that the temporary appointment of Jos. Spencer be made permanent, or if he should not become eligible, that another be substituted in his place.



## MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Denver - 3

melters, and two helpers, and later you transferred to us another melter from the Deposit melting room; but this did not permanently increase our force as Mr. Quirk, the foreman, was transferred to the Mint at Philadelphia, again reducing us to our original force of five men, and that is our regular force in that room at the present time, not counting, of course, your temporary appointment of Joe. Spencer on the 8th inst. During the recent rush on silver, we augmented this force by the addition of one melter and three helpers from the Refinery and two men from the Sweeps cellar.

This arrangement procured the amount of ingots you desired, but closed down the Sweeps cellar which has been entirely out of commission at least four months during 1907, because we did not have the men to run it. Our accumulation of sweeps is very large at the present time, and it will take continuous pushing work to dispose of them and what accumulates in the meantime, before settlement. I am very strongly of the opinion that the Sweeps cellar should work constantly so that we can keep up with a knowledge of the conditions as well as losses in the Refinery and Ingot melting rooms, and also because we always obtain our best results from sweeps cellar operations when they are not overcrowded.

In addition to the foregoing, we have had a reverberatory furnace in the building for many months, but as we could not possibly spare the men to erect it, it is still out of commission. I am very anxious to have it installed as soon as possible, so that

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

January 17, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

I have had the pleasure of reading and carefully considering the communication of the Director of the Mint, dated January 13, 1908, and the accompanying copy of a letter written by Dr. D. K. Tuttle, Melter and Refiner of the Philadelphia Mint, with reference to the use of Cupric Chloride as a flux for brittle gold. Dr. Tuttle has discovered or perfected many things that have been of much benefit to the mint operations, and this last step is certainly interesting as well as valuable, particularly the method he has employed to dehydrate the cupric chloride, and as well the way he has devised for applying it to the brittle melt; and, while our operations have never required the toughening of any melts, on account of the exclusive use of electrolytic gold, silver, and copper in our ingot work, yet I will appreciate it very much if you will permit me to retain said communications so that I can make use of the information therein contained should the occasion ever require.

As to the bell-shaped graphite stirrer, we have always used a modified form of the Philadelphia stirrer in all our gold work.

Respectfully,

*J. J. J. J.*  
Melter and Refiner.

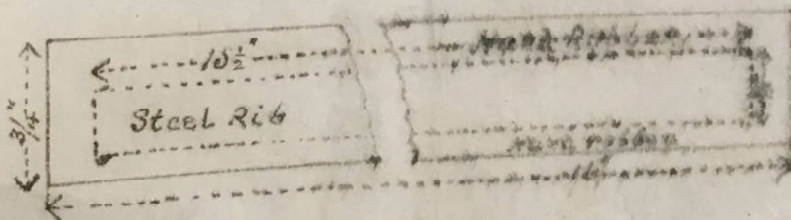
MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

January 27, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

I have the honor of requesting the obtainment from the American Hard Rubber Co., 9 Mercer St., New York, of a sample hard rubber rod with a  $1/8$ "x $3/8$ " steel rib running through the center, closed at each end with the rubber so that no part of the rib is exposed, and of the dimensions shown by the following diagram of the transverse and longitudinal sections, to wit:



This rod is designed to take the place of the porcelain rods now used on our gold cells, which become very brittle when heated by the occasional short circuiting of the current, then breaking and causing considerable loss, as their importation from Germany makes them quite expensive. I would also suggest that said Hard Rubber Company be requested to furnish us with said sample a price on 300 of said rods, so that if the sample rod and price are satisfactory, we can immediately place the contract for said equipment.

Respectfully,

*Forcumilam*  
Melter and Refiner.

U. S. MINT SERVICE.  
Form No. 219,  
Ed. Feb. 14, 1905. 5 1/2 x 10 1/2.

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at DENVER

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of January, 1908.

GOLD.

Received	Balance	Jan. 1 19	STANDARD OUNCES.				Delivered	Balance Jan. 31, 1908	19	STANDARD OUNCES.			
			640	967	265		Ingots				547	212	
Contained in Gold Deposits			58	766	901		Bars, Fine						
Contained in Silver Deposits			5	569	559		Bars, Standard						
Contained in			35	747	920		Bars, Unparted						
Chippings, blanks, etc.			12	894	060		Bars						
							Sweeps						
Con'd coin													
			751	945	705					751	598	493	
										751	945	705	

SILVER.

Received	Balance	Jan. 1 19	STANDARD OUNCES.				Delivered	Balance Jan. 31, 1908	19	STANDARD OUNCES.			
			810	103	16		Ingots				900	409	85
Contained in Gold Deposits			8	316	24		Bars, Fine						
Contained in Silver Deposits			25	295	80		Bars, Standard						
Contained in			778	152	84		Bars, Unparted						
Chippings, blanks, etc.			264	171	25		Bars						
			240	359	85		Sweeps						
Con'd coin													
			2	126						1	225	989	29
										2	126	309	14

CORRECT:

February 1, 1908.

Superintendent.

Melter and Refiner.

M I N T

D E N V E R

January, 1900

Melter &amp; Refiner's

Bush, W.M.	1	30	Leave
Chaffee, D.		30	"
Dakin, C.W.	6	30	"
Hetrich, J.M.	4		Sick
Howard, M.	1		Leave
Morrison, R.C.	2		"
Pughe, J.F.	2	30	"
"	2		Sick
Smith, E.S.	4		Leave
Spencer, G.N.	1	30	"
"	3		Sick
St. John, F.	3		Leave
Schell, E.P.	2		"
Whitaker, S.R.		30	"
Wirth, B.P.	1		"

Jan/08

## REFINERY

	Fine ounces	Standard ozs.
1. Product: A. Gold	104,119.035	115,387.817
b. Silver	149,760.000	166,400.000
Totals	253,879.035	282,087.817

2. Costs:	Totals	Cost per ounce
a. Labor	1461.83	.00518218
b. Crucibles, covers, rings	111.60	.00039562
c. Acids	396.15	.00140434
d. Incidentals	261.70	.00092772
e. Mitts, gloves, aprons	53.26	.00019880
f. Chemicals	20.00	.00007089
g. Sweeps cellar	281.05	.00099652
h. M. & R. Gen'l	195.55	.00069322
i. Fuel	249.20	.00088341
j. Power	589.35	.00208924
k. Repairs	96.65	.00054262
l. Light, ventilation & pump	120.84	.00042837
m. Sick leave, vacation & holidays	19.57	.00006937
Totals	3856.75	.01367216

3. New Equipment 179.32

Total Expense 4036.07

4. Crude bullion refined, approximately, 366,587.79

5. Cost per crude ounce, .01052067

6. " " standard " .01367216

7. " " fine " .01519129

Jan/08

## INGOT MELTING ROOM

1. Amount of bullion melted:	a. Gold, standard ozs.	75,176.64
	b. Silver " "	921,470.24
	Total	<u>996,646.88</u>

2. Amount of good ingots:	a. Double eagles,	38,416.38	
	b. Eagles	36,681.38	75,097.76
	c. Half dollars	474,335.60	
	d. Quarter "	373,125.35	
	e. Dimes	56,605.85	904,066.80
	Total		<u>979,164.56</u>

## 3. Cost of Ingots:

	Gold		Silver		Total	
	Total	Cost per oz	Total	Cost per oz	Total	Cost per oz
a. Labor	98.55	.00131228	1233.22	.00136408	1331.77	.00136010
b. M. & R. Gen'l	14.47	.00019268	181.08	.00020029	195.55	.00019971
c. Mitts, gloves	2.62	.00003488	47.50	.00005254	50.12	.00005118
d. Crucibles	10.04	.00013369	87.40	.00009667	97.44	.00009951
e. Sweeps cellar	0.00	.00000000	0.00	.00000000	0.00	.00000000
f. Incidentals	6.36	.00008468	100.33	.00011097	106.69	.00010896
g. Fuel	12.00	.00015979	247.60	.00027387	259.60	.00026512
h. Power	3.21	.00004274	40.20	.00004446	43.41	.00004433
i. Light, ventil'n	1.55	.00002063	19.45	.00002151	21.00	.00002144
j. Repairs	3.66	.00004873	45.84	.00005070	49.50	.00005055
k. Sick leave, &c	3.08	.00004101	38.55	.00004264	41.63	.00004251
Totals	155.54	.00207116	2041.17	.00225776	2196.71	.00224345
1. Alloy copper	45.78	.00060960	761.81	.00084264	807.59	.00082477
Totals, including Alloy Cop.	201.32	.00268077	2802.98	.00310041	3004.30	.00306822

## 4. New Equipment

164.76

Total expense

\$3169.06

5. Percentage good ingots to amt. bullion melted:	Gold,	99.89
	Silver	98.11

## 6. Average cost per ounce of ingots for seven months:

	Gold	Silver	Total
a. Excluding alloy copper	.00235986	.00239625	.00238820
b. Including " "	.00345729	.00342281	.00343044

## 7. Costs distributed to denominations:

a. Double eagles	102.98
b. Eagles	98.34
c. Half dollars	1470.73
d. Quarter "	1156.79
e. Dimes	<u>175.46</u>

Total \$3004.30

## DEPOSIT MELTING

a. Power	14.12
b. Fuel	<u>84.24</u>
Total	<u>\$98.36</u>

Jan/08

## SWEEPS CELLAR

1. Product	a. Gold - Standard ounces	248.340	
	b. Silver " "	563.220	
	c. Tailings, avoir. lbs.	-	9457

## 2. Costs:

a. Labor	147.00
b. Power	23.54
c. Light, ventilation & pump	30.00
d. Incidentals	11.92
e. Repairs	68.59,

Total expense	<u>\$281.05</u>
---------------	-----------------

## 3. Tailings:

a. Amount, avoir. lbs.	9457	
b. Contained Gold, standard ozs.	24.136	
c. " Silver " "	256.66	

## 4. Percentage of extraction:

a. Gold	88.50
b. Silver	68.69

5. Departments charged as follows: All to Refinery.

U. S. MINT SERVICE.  
Form No. 310.  
Ed. Feb. 3-00-800-8 x 10 1/4.

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at DENVER

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of FEBRUARY, 1908.

GOLD.

Received	Balance	Feb. 1 19	STANDARD OUNCES.			Delivered	Balance Feb. 29, 1908	19	STANDARD OUNCES.		
			751	398	493	Ingots			459	226	900
Contained in Gold Deposits			55	115	690	Bars, Fine					
Contained in Silver Deposits			4	487	461	Bars, Standard					
Contained in						Bars, Unparted					
Clippings, blanks, etc.			93	013	630	Bars				76	002
						Sweeps					
			904	015	274				464	712	372
									904	015	274

SILVER.

Received	Balance	Feb. 1 19	STANDARD OUNCES.			Delivered	Balance Feb. 29, 1908	19	STANDARD OUNCES.		
			1	225	989	Ingots			456	626	25
Contained in Gold Deposits			7	109	77	Bars, Fine					
Contained in Silver Deposits			21	015	20	Bars, Standard					
Contained in			225	204	51	Bars, Unparted					
Clippings, blanks, etc.			102	663	05	Bars				454	17
			16	253	75	Sweeps					
			1	598	235				1	141	153
					57				1	598	235
										57	57

CORRECT:

March 2

1908.

Superintendent.

Melter and Refiner.

*William*

Mint

Denver

Melter and Refiner's

February, 1908

Arnold, R.G.	3	1	30	Leave
Eush, W.M.		1	30	"
Hetrich, J.M.	3			"
"	26			Sick
Pughe, J.F.			30	Leave
Ryan, P.	2			"
Schell, E.P.	1	4		"
Spencer, G.N.	1	5	30	"
St. John, F.		4	30	"
Stoddard, X.T.		2	30	"
Whitaker, S.R.	2			"
Winn, H.H.		1		"
Wirth, B.P.		4		"

Feb/08

## REFINERY

1. Product:	a. Gold	110,992.70	Fine ozs.
	b. Silver	145,470.07	" "

Total	356,462.77	" "
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2. Costs:	Totals	Cost per oz.
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a. Labor	1383.45	.00533435
b. Crucibles	87.40	.00034079
c. Acids	294.52	.00114359
d. Incidentals	180.73	.00070470
e. Mitts & Gloves	58.74	.00022903
f. Chemicals	15.00	.00005949
g. Sweeps cellar	72.80	.00026386
h. M. & R. Gen'l	125.00	.00046740
i. Fuel	214.00	.00085442
j. Power	609.74	.00237749
k. Repairs	160.22	.00062473
l. Light & Ventilation	70.00	.00027294
m. Sick leave, vacation & holidays	146.68	.00057193
n. Assays	248.05	.00096713

Totals	3666.33	.01429575
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3. New Equipment

195.31
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Total expense	3861.64
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4. Average cost per fine ounce since July, 1907, .01371788

5. Crude bullion refined, approximately, 364,066.324 gross ozs.  
Cost per gross ounce .01007050

6. Average cost per gross ounce since July, 1907, .00968541

Feb/08

## INGOT MELTING

1. Amt. of bullion melted: a. Gold, std. ozs. 433,923.46  
 b. Silver " 358,071.05

Total 791,994.51

2. Amt. good ingots: a. Double Eagles 425,127.59  
 b. Half Dollars 230,548.60  
 c. Dimes 121,012.45 351,561.05

Total 776,688.64

3. Cost of Ingots: Gold		Silver		Total	
Total!	Per oz. :	Total!	Per oz. :	Total!	Per oz. :
a. Labor	344.89 .00081079	327.23 .00093079	671.92 .00086510		
b. M. & R. Gen'l	64.12 .00015082	60.88 .00017317	125.00 .00016093		
c. Mitts, gloves	11.25 .00002646	13.12 .00003731	24.37 .00003137		
d. Crucibles	35.56 .00008364	32.20 .00009159	67.76 .00008724		
e. Swp. Cellar	87.09 .00020485	82.77 .00023543	169.86 .00021869		
f. Incidentals	54.06 .00012716	73.97 .00021040	128.03 .00016484		
g. Fuel	88.00 .00020699	104.80 .00029809	192.80 .00024823		
h. Power	28.40 .00006680	26.95 .00007665	55.35 .00007126		
i. Light, Ventl'n	10.26 .00002413	9.74 .00002770	20.00 .00002575		
j. Repairs	23.77 .00005591	22.57 .00006419	46.34 .00005966		
k. Sick lv. &c.	65.38 .00015378	62.08 .00017658	127.46 .00016410		

Totals 812.58 .00191137 816.31 .00232195 1628.89 .00209722

1. Alloy Copper 629.37 .00148042 489.88 .00139344 1119.25 .00144105

Totals incl.

Alloy Copper 1441.95 .00339180 1306.19 .00371540 2748.14 .00353827

4. New Equipment

20.69

Total expense

2768.83

5. Percentage good ingots to amt. bullion melted: a. Gold 97.97  
 b. Silver 98.18

6. Average cost per oz. of Ingots for eight months:

	Gold	Silver	Total
a. Excluding alloy copper	.00225261	.00239115	.00235541
b. Including "	.00344163	.00344293	.00344259

7. Costs distributed as follows: a. Double eagles 1441.95  
 b. Half dollars 856.86  
 c. Dimes 449.33

Total \$2748.14

## DEPOSIT MELTING

a. Power 14.05  
 b. Fuel 77.76  
 c. Repairs 8.50  
 d. New Equipment 46.72

Total

147.03

Feb/08

## SWEEPS CELLAR

1. Product: a. Gold standard ounces 161.811  
 b. Silver " " 782.00  
 c. Tailings, avoird. lbs. - - - 21,620

## 2. Costs:

a. Labor	173.61
b. Power	14.38
c. Light & ventilation	29.67
d. Incidentals	5.65
e. Sick leave &c	8.45
f. Repairs	<u>10.90</u>

Total expense	242.66
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3. Tailings: a. Amount avoird. lbs. 21,620  
 b. Contained Gold, 35.422  
 c. " Silver, 512.03

4. Percentage of extraction: a. Gold 82.04  
 b. Silver 60.43

## 5. Departments charged as follows:

a. Ingot melting room	169.86
b. Refinery	<u>72.80</u>
Total	\$242.66

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

March 25, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

On January 16, 1906, Mr. J. M. Hetrich entered upon his work as Foreman of the Make-up room in this Mint, at a salary of \$1600 per annum. August 16th following, he was promoted to the position of Assistant Melter and Refiner which position he holds and the duties of which he has ever performed most satisfactorily. On February 6, 1906, Mr. John F. Pughe commenced work in the Melter and Refiner's department as a helper at \$3.25 per day and was assigned to the Make-up room; and on September 1st, 1906, following the promotion of Mr. Hetrich, he was advanced to the position of a skilled workman at \$4.50 per day; it being my intention, if he made good in the performance of his duties, to later recommend his advancement to the position and salary of Foreman of the Make-up room.

The make-up work has always been under the personal supervision of Mr. Hetrich, and, as he was never absent from his duties, we did not (until recently) have any opportunity of getting a satisfactory line on Mr. Pughe's ability. On January 27, 1908, Mr. Hetrich met with a severe accident which confined him in a hospital from that date until March 17th, and the entire supervision and responsibility of the Make-up room fell upon Mr. Pughe.

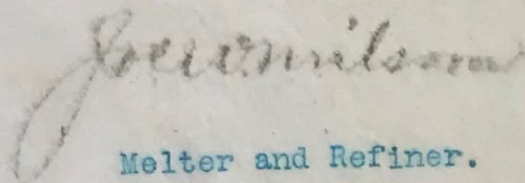
## MINT OF THE UNITED STATES AT DENVER,

Downer - 2

MELTER AND REFINER'S DEPARTMENT,

and it affords me much pleasure to inform you that he acquitted himself splendidly in every way. He was at all times courteous to everybody and very willing and anxious to push the work along, and he did not make any error or mistake of any kind from start to finish. I therefore most earnestly recommend that John F. Pughe be promoted to the position of Foreman of the Make-up room at a salary of sixteen hundred dollars per year, to take effect April first, 1908.

Respectfully,



Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

March 26, 1908.

Hon. Frank M. Downer,  
Superintendent U.S. Mint,  
Denver.

Sir:

I have the honor of presenting herewith for your consideration, a reclassification of the employees in the Melter and Refiner's department, under Department Circular No. 15, app. Feb. 28, 1908:

M. & R. General

Josiah M. Hetrich, Assistant Melter and Refiner  
Farnum St. John, Clerk

Make-up Room

John F. Pughe, Foreman  
Enos P. Schell, Helper

Ingot Melting room

Richard C. Morrison, Foreman  
Denver Chaffee, Melter  
William M. Bush, "  
Michael Howard, Helper  
William N. Dardis "  
Joseph H. Spencer " (Temporary appointment, Jan. 9, 1908)

## MINT OF THE UNITED STATES AT DENVER,

## MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

## Refinery

Benno P. Wirth, Foreman

Herbert D. Bartlett, Skilled workman

John H. Crary "

Burt G. Shields "

Herbert H. Winn "

George Borstadt, Jr. "

Burt H. Taggart "

William S. O'Brian "

Robert G. Arnold "

George N. Spencer, Helper

Samuel R. Whitaker "

Xerxes T. Stoddard, Melter

Charles W. Dakin "

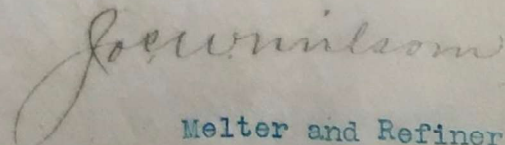
George B. Gray "

## Sweeps Cellar

Elmer S. Smith, Skilled workman

Harry R. Whitehead "

Respectfully submitted,



Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

March 27, 1908.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

I have the honor of presenting herewith for your consideration  
a reclassification of the employees in the Melter and Refiner's  
department, under Department Circular No. 15, app. Feb. 28, 1908:

Schedule Sub. Div.

M. & R. General

Josiah M. Hetrich, Assistant M. & R. . . . .	B	
Farnum St. John, Clerk . . . . .	C	2

Make-up Room

John F. Pughe, Foreman . . . . .	D	2
Enos P. Schell, Helper . . . . .	D	3

Ingot Melting Room

Richard C. Morrison, Foreman . . . . .	D	2
Denver Chaffee, Melter . . . . .	D	2
William M. Bush, " . . . . .	D	2
Michael Howard, Helper . . . . .	D	3
William N. Dardis, " . . . . .	D	3
Joseph H. Spencer, " (temp. appointment Jan. 9, 1908) . . . . .	D	3

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Superintendent - 2

Refinery	Schedule	Sub. Div.
Benno P. Wirth, Foreman . . . . .	B	
Herbert D. Bartlett, Skilled Workman . . . . .	D	1
John H. Crary, " . . . . .	D	1
Burt G. Shields, " . . . . .	D	1
Herbert H. Wilm, " . . . . .	D	1
George Borstadt, Jr., " . . . . .	D	1
Burt H. Taggart, " . . . . .	D	1
William S. O'Brian, " . . . . .	D	1
Robert G. Arnold, " . . . . .	D	1
George N. Spencer, Helper . . . . .	D	3
Samuel R. Whitaker, " . . . . .	D	3
Patrick Ryan, " . . . . .	D	3
Xerxes T. Stoddard, Melter . . . . .	D	2
Charles W. Dakin, " . . . . .	D	2
George B. Gray, " . . . . .	D	2
Sweeps Cellar		
Elmer S. Smith, Foreman, . . . . .	D	2
Harry R. Whitehead, Skilled Workman . . . . .	D	1

Respectfully submitted,

*Joseph Milburn*  
Melter and Refiner.

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at DENVER

Gold and Silver <sup>Bar</sup> Balances in the Melted and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of March, 1908.

GOLD.

Received	Balance	Mch. 1	19	STANDARD OUNCES.				Delivered	Balance	March 31, 1908	19	STANDARD OUNCES.			
				464	712	372		Ingot				176	127	740	
Contained in Gold Deposits				61	193	178		Bars, Fine							
Contained in Silver Deposits				5	862	140		Bars, Standard							
Contained in					12	134		Bars, Unparted							
Chippings, blanks, etc.				80	741	400		Bars							
				6	408	050		Sweeps							
Con'd coin															
				618	929	264						442	801	524	
												618	929	264	

SILVER.

Received	Balance	Mch. 1	19	STANDARD OUNCES.				Delivered	Balance	March 31, 1908	19	STANDARD OUNCES.			
				1	141	155	15	Ingot				611	402	75	
Contained in Gold Deposits				8	022	79		Bars, Fine							
Contained in Silver Deposits				26	357	76		Bars, Standard							
Contained in					5	08		Bars, Unparted							
Chippings, blanks, etc.				172	838	70		Bars							
				445	269	54		Sweeps							
Con'd coin				53	021	20									
				1	846	734	18					1	233	551	82
												1	846	734	18

CORRECT:

Superintendent.

March 31

1908

*John Wilson*

Melter and Refiner

Mint

Denver

Melter and Refiner's

March, 1908.

Chaffee, D.		1		leave
Hetrich, J.M.	16			"
Pughe, J.F.		1	30	"
Schell, E.P.	1	1		"
Shields, B.G.	1			"
Smith, E.S.			30	"
Spencer, G.H.	1			"
Spencer, J.E.	4			Without pay
St. John, F.		3		Leave
Stoddard, M.T.		1		"
Taggart, B.H.	2			"
Whitehead, H.R.		1		"
Whitaker, S.R.	1			"
Wirth, E.P.		3		"

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

April 6, 1908.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

I beg to hereby make requisition for the following books and blanks for use in the Melter and Refiner's department:

- |   |   |              |       |
|---|---|--------------|-------|
| 1 | Silver Clipping Receipt book,               | Form No. 28  |       |
| 1 | Deposits sent to the Refinery,              | " "          | 338   |
| 2 | Foreman's record of Silver melting,         | Form No. 275 |       |
| 2 | M. & R.'s record of Gold ingot melting,     | Form No. 185 |       |
| 2 | " " " Silver " "                            | " "          | 184   |
| 3 | " vault register (silver)                   | " "          | 413B  |
| 4 | Register of Deposits, M. & R. Dept.         | " "          | _____ |
|   | 1000 Anode melt blanks, (new copy attached) |              |       |
|   | 1000 Gold ingot melt blanks                 | "            |       |
|   | 3000 Silver " " " "                         | "            |       |
|   | 250 daily statements of operations,         | Form No. 722 |       |

Accompanying this requisition are samples of all books and forms desired, showing style of paper, ruling, printing, and number of leaves in each book.

Respectfully,

*James Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

April 7, 1908.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

I hereby beg to make requisition for the following new books and blanks, of which samples are attached:

4 Registers of deposits  
1000 Anode melt blanks  
1000 Gold ingot melt blanks  
3000 Silver " " "

Relative to the need of these new forms, I beg to make the following statement:

All deposits of bullion are listed in registers which we have been ruling ourselves for the past two years. A glance at the columns required for this work will show how essential the books are in the conduct of our refinery operations. In fact, they are so constantly in demand that we have found it necessary to keep two--one for gold deposits and one for silver--so that the unceasing requirements of the refinery make-up might not interfere almost altogether with the calculating of bars and clips. We are now ruling our third book, and shall start a fourth in less than a month. No book furnished by the department at all answers our requirements in this matter.

The anode melt blanks asked for are required in the make-up of every charge sent to the refinery. Since August 20th, 1907,

## MINT OF THE UNITED STATES AT DENVER,

Superintendent - 2

MELTER AND REFINER'S DEPARTMENT,

we have ruled and used no less than 450 of these blanks. When a melt contains 20 bars or more, it is necessary to rule two or more pages for one melt.

The gold and silver ingot<sup>melt</sup> blanks are furnished to the foreman of the ingot melting room, and serve as an identifying memorandum of the melt number, bar numbers, weights of bars and copper, etc. We have used more than 1800 of these during this fiscal year.

The ruling, writing, and stamping of these books and blanks takes a great deal of valuable time. I therefore respectfully ask that books and blanks substantially like the attached samples, be procured for the use of this department.

Respectfully,

*James Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

April 7, 1908.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

In response to your inquiry for an outline of our plan for keeping a check on Refinery operations, I have the honor of presenting the following:

It may not be amiss to cover the whole Refinery account; so we will start at the office: After the foreman of the Make-up room has worked out his anode melts, they are entered in the "Record of Refinery Gold Melts," Form No. 871 (this book is not ruled just right as it should have columns for both gold and silver, as practically all of our anode melts contain both metals) and this entry on the debit side shows the kind of melt (i.e., gold or silver), the number of melt (consecutively from the beginning of the fiscal year), the particular bars of bullion composing the melt (by deposit number), the gross weight of melt, the fineness (as calculated by make-up) of both gold and silver and the standard ounces of each. On the credit side is shown the number of the melt of fine gold or silver returned from the Refinery, the number of bars comprising the melt, the gross weight, the fineness as certified by the Assayer, and the number of standard ounces; and from this book the posting is made to the "Refinery Account" Ledger (Form 869).

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

The Foreman of the Refinery (with such helpers as he finds necessary), receives and delivers all melts in the make-up room, and he is in charge of and responsible for all melts during transfer to and from Refinery; upon reaching the Refinery, the truck containing the melts is run into the Refinery steel vault (combination locked), where it remains until needed for melting. Upon taking the melts out of the vault for delivery to the melting room, the bars of each melt are again checked with the make-up slip that accompanies each melt until it goes into the crucible. When the melts are poured, a chip sample for assaying is taken from the first and last anode of gold melts, and a dip sample corresponding to first and last anode on silver melts. The crucibles used in making anode melts are completely emptied after each melt, so that we can get a check on the make-up by comparing the assays of the anode melts with the make-up finenesses, which, as a rule, check quite closely.

During the earlier operating of our Refinery, a system of checking was established which was as follows: The day cell-men (8 a.m. to 4 p.m.) would leave out of the vault enough anodes, cathodes, and hangers for the two night-shifts, with a written list of same, including what were in the cells, which would be checked and signed by the first night-shift (4 p.m. to 12 p.m.); the first night-shift would use whatever material was necessary and make a list of what was remaining, including the anode tops

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Superintendent - 3

taken out, which list would be checked and signed by the second night-shift; and they in turn would make a similar list which checked and would be assigned by the day-shift men coming on at 8 a.m.; and this system remains practically the same at the present time--in fact, just the same, with the exception of the anode tops, which we do not always remelt as formerly, because we have an insoluble hanger on which we hang them beneath the surface of the electrolyte and dissolve them, but of course that does not prevent keeping an account of them.

Four assay samples are taken from each melt of fine gold or silver, which from the former are by chip and from the latter by dip.

The foreman of the Refinery is required to give a receipt for all melts received by him, and in turn is given a receipt for all fine or settlement bullion returned by him to the Melter and Refiner. Of course, the anodes, cathodes, hangers, melts, sweats, etc., not in use are kept under lock in the Refinery vault, and we use all the care possible in our Refinery work, the foreman keeping in close touch with all the details of everything.

I think that covers the details of our check system, but I would like to add that twelve months is a very long time to run a Refinery operating upon many millions of gold without a settlement of some kind, and so I am strongly in favor of making an additional settlement with the Refinery in December of each year. This settlement need not exceed ten days in time, because it is

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 4

not necessary to tear out the furnaces or clean the flues, and it can easily be brought within a hundred ounces of gold of being correct; and our experience will enable us to very closely approximate the actual whereabouts of the balance. I have put this semi-annual Refinery settlement to the test, and it works well; it has a tendency to bring peace to the troubled soul.

Very respectfully,

*Joachim*

Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

April 8, 1908.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

Referring to the communication, under date of April 4, 1908, of the Honorable Director of the Mint, with reference to the promotion of John F. Pughe, skilled workman, to the position of Foreman of the Make-up room, I must confess that the mistake in procedure was my own; but I would like to inform you how I came to be misled in the matter.

As you remember, we encountered some delay in the transfer of Mr. J. M. Hetrich, then assistant assayer at the Carson City Mint, to this institution; that caused considerable correspondence, in all of which the position we sought to transfer him to was always designated as "Foreman of the Make-up room." It was so designated by the then Director, Mr. Roberts, and it was under his advice that I made the recommendation for the transfer under said title, and Mr. Hetrich was carried on our rolls as such Foreman of the Make-up room at a salary of \$1600 per annum, until he was promoted to the position of Assistant Melter and Refiner. At this time, also, Mr. Pughe was promoted from the position of helper at \$3.25 per day to that of skilled workman at \$4.50 per day, to take the place made vacant by Mr. Hetrich's promotion, but without the title or full compensation, until such time as we could be fully satisfied

## MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

as to his competency.

As you remember, Mr. Hetrich was recently in St. Luke's hospital for nearly two months, during which time Mr. Pughe had entire charge of the make-up work for both Refinery and Ingot room, and he acquitted himself of these duties with much credit and to our entire satisfaction; so I supposed it would be quite proper to recommend him for the foremanship of the Make-up room, a position which had been vacant since Mr. Hetrich's promotion.

The work performed by Mr. Pughe is somewhat different from that of a weigher, because he is required to do so much clerical work. As you know, I have only one clerk in my department, and he is so busy all the time that we cannot possibly increase his duties; so we all assist in keeping things moving, and Mr. Pughe's part is largely that of making check calculations on the make-up work, and looking after the necessary transfers, as well as assisting in the office when not otherwise engaged.

And so I respectfully ask permission to present the following: I earnestly recommend that John F. Pughe, skilled workman at \$4.00 per day, be promoted to the position of clerk, Subdivision 2 of Schedule C, at a salary of sixteen hundred dollars per annum to take effect May 1st, 1908. I consider this a most meritorious case, and, in view of my shortage of clerical assistance and the duties performed along that line by Mr. Pughe, I trust you can

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

Superintendent - 3

see your way clear to present it to the Director with your approval.

Respectfully,

*Joseph Wilson*

Melter and Refiner

MOF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

April 11, 1908.

Hon. Frank M. Down

Superintendent. S. Mint,  
Denver.

Sir:

Mrs. Milson's hith necessitates her removal to a lower altitude for a time, & as the railroads have granted special rates to the Pacific coast on account of the naval demonstration at San Francisco early in May, I feel that I would like to take advantage of this opportunity to give her a rest at sea-level, as well as to satisfy a long-standing desire to visit the San Francisco mint that I might look into the details of the Melter and Refiner's work there and get the benefit of their experience.

I therefore request a leave of absence for thirty days, commencing on or about the 25th inst.

Respectfully,

*Joseph Milson*

Melter and Refiner.

Feb./08

# REFINERY

1. Product: a. Gold	110,420.434	Fine ozs.
b. Silver	145,154.478	" "

Total	255,574.912	" "
-------	-------------	-----

2. Costs:	Totals	Cost per oz.
a. Labor	1400.62	.00549027
b. Crucibles	87.40	.00034197
c. Acids	421.86	.00185063
d. Supplies	196.96	.00077065
e. Mitts & gloves	48.34	.00018914
f. Chemicals	20.00	.00007625
g. Sweeps cellar	0.00	.00000000
h. M. & R. General	156.94	.00061406
i. Fuel	175.20	.00068551
j. Power	552.47	.00216167
k. Repairs	129.56	.00050302
l. Light, ventilation	80.00	.00031301
m. Incidentals	3.65	.00001428
n. Assays	200.90	.00078607
o. Sick leave, vacation & holidays	73.69	.00028833
Totals	3546.59	.01387690

3. New Equipment

343.40

Total expense

3889.99

4. Average cost per fine ounce since July, 1907, .01373857

5. Crude bullion refined, approx., 384,595.422 .00922161

6. Average cost per gross ounce since July, 1907 .00962188

Mch/08

## INGOT MELTING ROOM

1. Amt. of bullion melted:	A. Gold, std. ozs.	185,771.25
	B. Silver "	727,892.82
	Total	<u>913,664.07</u>

2. Amt. good ingots:	a. Double eagles	176,123.23
	b. Half dollars	461,706.40
	c. Dimes	246,928.95
	Total	<u>708,635.35</u>
		884,758.58

3. Cost of ingots:	Gold		Silver		Total	
	Total	Per oz.	Total	Per oz.	Total	Per oz.
a. Labor	159.33	.00090485	688.20	.00097116	847.53	.00095799
b. M.&R.Gen'l	29.50	.00016749	127.44	.00017983	156.94	.00017739
c. Mitts, gloves	8.12	.00004610	26.50	.00003739	34.62	.00003912
d. Crucibles	20.08	.00011400	60.00	.00008466	80.08	.00009051
e. Sweeps cellar	60.40	.00034294	260.88	.00036814	321.28	.00036312
f. Supplies	23.52	.00013354	79.85	.00011268	103.37	.00011688
g. Fuel	43.20	.00024528	174.80	.00024387	218.00	.00024636
h. Power	10.11	.00005740	43.66	.00006161	53.77	.00006077
i. Light, vent'l'n	3.76	.00002134	16.24	.00002291	20.00	.00002360
j. Repairs	8.32	.00004723	35.93	.00005070	44.25	.00005001
k. Incidentals	0.23	.00000130	0.97	.00000136	1.20	.00000138
l. Sick leave, &c	12.81	.00007273	55.38	.00007815	68.19	.00007702
Totals	379.38	.00215406	1569.85	.00221531	1949.23	.00220310
m. Alloy copper	197.30	.00112023	334.94	.00047265	532.24	.00060150
Totals, including Alloy Cop.	576.68	.00327429	1904.79	.00268796	2481.47	.00280460

4. New Equipment

58.40

Total expense

\$2539.87

5. Percentage of good ingots to amt. bullion melted:	a. Gold	94.8
	b. Silver	97.3

6. Average cost per ounce of ingots for nine months:

	Gold	Silver	Total
a. Excluding alloy copper	.00224373	.00236975	.00233808
b. Including " "	.00342655	.00335105	.00337002

7. Costs distributed as follows:	a. Double Eagles	576.88
	b. Half dollars	1247.64
	c. Dimes	<u>657.15</u>
	Total	<u>\$2481.47</u>

## DEPOSIT MELTING

Power	14.62
Fuel oil	84.24
Repairs	6.50

Mch/08

## SWEEPS CELLAR

1. Product:	a. Gold, std. ozs.	50.754	
	b. Silver "	521.076	
	c. Tailings, avoird. lbs.		13,176

## 2. Costs:

a. Labor	187.60
b. Power	81.06
c. Light & Ventilation	35.41
d. Supplies	8.01
e. Repairs	6.05
f. Incidentals	2.25
g. Vacation, sick leave	<u>0.90</u>
Total	321.28
h. New equipment	<u>26.24</u>
Total expense	<u>347.52</u>

## 3. Tailings:

a. Amount avoird. lbs.	13,176	
b. Contained gold, std. ozs.		21.181
c. " silver "		<u>157.830</u>

## 4. Percentage of extraction:

a. Gold	70.5
b. Silver	76.7

## 5. All charged to Ingot room.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

April 21, 1908.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

Under date of January 7, 1908, I addressed to you the following communication regarding our Sweeps Cellar:

Sir:

I have the honor of directing your attention to a matter of vital importance regarding our Sweeps Cellar. I understand the contract recently awarded to Wm. Duthie to make an inside entrance from the Mint building to the Sweeps cellar includes also the closing up of the alley-way entrance at the south end of the Sweeps cellar. This alley-way entrance was originally designed for the purpose of placing therein a small hoist or elevator to raise the tailings from the Sweeps cellar up to the alley-way for loading into the wagons for shipment, as well as for the purpose of ventilation. The hoist has never been installed, and so we have had to carry all the tailings up two flights of steps to reach the wagons. However, said alley-way entrance has been a very important factor in our operations in the Sweeps cellar as a ventilator; we dry all our tailings on a steam drier and under the most favorable conditions obtaining at present it is far from being a pleasant place to work in, as we only have one other opening, and that is at the southeast corner, the entrance door. Some time ago, I recommended that a grille be placed across the face of the archway forming the entrance to said alley-way opening as a measure of safety, and I now renew said recommendation, and very earnestly protest against the closing of said alley-way opening, or making any change thereof, other than the placing of said grille. I also recommend the installation of said elevator so as to do away with the laborious and expensive carrying by hand of the tailings up two flights of stairs to the alley.

On at least two previous occasions I have recommended certain changes in the Sweeps cellar, regarding which no action has been taken, and it seems proper for me to refer to them in this communication. The size of our Sweeps cellar is 37 by 44 feet, with six concrete pillars each two feet square supporting the roof, and the lighting of the room is entirely by artificial means, as daylight cannot

## MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

enter anywhere. This room is not large enough for our purposes, in fact not large enough to complete the installation of our equipment, and until we get more space it would be very difficult to install the concentrating table necessary to complete our system of extraction.

I recommend that the Sweeps cellar be extended in length to the North twenty feet; and that the present dirt roof be entirely discarded and be replaced by a suitable concrete arch roof, with the necessary provision for light and ventilation. And if the roof cannot for any reason be changed in the near future, then six-inch iron columns should be substituted for the large concrete pillars.

The inside passage-way, now under contract, is of such nature that it can be used for the passage of the employees, but not for the transportation of sweeps, as there are two flights of steps to go down, one at the exit of the main building and the other at the entrance to the Sweeps cellar. My idea was to have said passage-way extend due west from its exit in the main building to the west line of the Sweeps cellar and then turn south along the west wall (extended) of the Sweeps cellar a distance of 22 feet, thus giving us a distance of 76 feet in which to drop 7 feet, which would permit of the passage-way being built without any steps, and on such a grade that we could easily truck down the sweeps from the main building, which would be quite sufficient as the tailings would be removed by the alley-way exit.

Trusting that I have made my views clear in a general way, and assuring you that it will be a pleasure to present the whole matter in detail if desired, I remain, etc.

Under date of April 16, 1908, the Supervising Architect, in communication to the Custodian relating to the Sweeps cellar, answers the foregoing letter by saying, among other things, the following:

"In this connection you are advised that it is not deemed best to omit the closing up of the opening covered by doors in the alley roadway as required by the specification, such opening being considered extremely dangerous."

I certainly consider it an official duty to further protest against and respectfully oppose the attitude of the Supervising Architect as above expressed, with reference to closing said alley

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Superintendent - 3

entrance; I suppose the reason given to be the only objection, as I have never heard of any other; and if that be true, I think the objection must be based upon a misunderstanding of the facts. And the danger must be considered as running against the main building and not the Sweeps cellar itself, because I called attention to the danger to the Sweeps cellar on at least two previous occasions, the first time over two years ago, and no action was ever taken with reference to it. Now as to the facts in their relation to danger to the main building: The exit from the main building to the passage-way is to be secured by a suitable grille, and the entrance to the Sweeps cellar at the other end of the passage-way is to be likewise secured by a similar grille (as shown on Drawing No. 29), and that is the protection between the Sweeps cellar and the main building. Now, as to the Sweeps cellar itself, there are two openings, the doorway at the southeast corner, through which we enter and carry all of our sweeps and supplies down two flights of steps; and that opening is protected by a suitable grille. The other opening is the one now sought to be closed, and I will try to describe it. It consists of an archway opening off the south end of the cellar, the bottom of it being a continuation of the cellar floor. It is nine feet wide, the center of arch is six feet and three inches high, and the arch extends south five and one-half feet, and the balance of the way to the south wall five feet is opened up to the alley-way and is at present secured by heavy iron doors lying flat, level with the alley,

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 4

and secured underneath by suitable fastenings. This arch, floor, and walls are of heavy concrete; and my recommendation of two years ago, and since, was that a grille be placed across the opening of said archway, and if this were done, that entrance would be equally as secure as the doorway at the southeast corner, and the "extremely dangerous" feature would certainly be eliminated. The contract for the passage-way awarded to Wm. Duthie, included in its terms also the closing permanently of said alley opening, and I understand that, in response to my letter of January 7, 1908, above set forth, you recommended that that part of the contract be cancelled; and the letter of the Supervising Architect of April 16, hereinbefore referred to, is the only advice you have received with reference to the matter. Mr. Duthie's contract expired on April 1st, and no objection having been made to your recommendation for the cancellation of the part of said contract referred to, materials have been purchased for the building of an inexpensive chain lift in said archway for the raising of our tailings to the roadway above, and we now have sacked, waiting the installation of said lift, more than twenty-two tons of tailings; and if said alley opening is closed and we are prevented from putting in said lift, then the said twenty-two tons of tailings now ready, together with all produced in the future, must be carried up two flights of steps to the roadway above, and, owing to the fact that quite a number of the employees in this department have not the physical strength to assist in said work, it

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 5

seems unfair to impose it upon the others, especially when we can so readily, cheaply, and safely do away with it entirely. Our Sweep<sup>is</sup> cellar, as it is, ill-adapted to our work, it is not large enough, is studded with concrete pillars two feet square, and at present has no easy or economical way of either getting materials in or out of it, and I most earnestly protest against further disadvantages being heaped upon us.

very respectfully,

*Joseph Wilson*

Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

April 21, 1908.

Dr. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

Section 25, Article 29, of the new regulations is the same as Section 27, Article 29 of the old regulations; we have never made any report under that section, nor have we been provided with any blanks for such purpose. I take pleasure in presenting a statement, under said section, for the month of March, 1908:

Bullion operated upon,	Gold,	185,771.25	std. ozs.
"	"	"	"
"	Silver,	727,892.82	" "

Apparent wastage,	Gold,	68.86	" "
"	"	"	"
"	Silver	461.87	" "

All ingots.

The amount of bullion operated upon is also included in our monthly cost report.

I would be pleased to have the regular blanks provided for these reports, if they can be obtained.

Very respectfully,

*Joseph Milcom*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

April 30, 1908.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

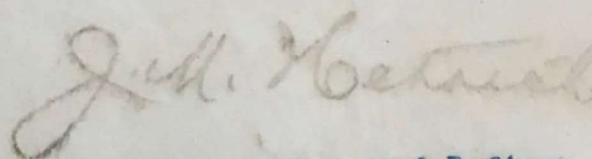
Sir:

I beg to report that there are tailings in our Sweeps cellar  
ready for delivery, as follows:

154 Sacks of Refinery sweeps

317    "    " Ingot    "

Respectfully,



Assistant Melter and Refiner.

Print of the United States at D E N V E R

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of April....., 1908.

## STANDARD OUNCES.

STANDARD OUNCES.		STANDARD OUNCES.	
Received			
Balance	442	801	534
Contained in Gold Deposits	71	531	241
Contained in Silver Deposits	7	282	067
Contained in	123	917	410
Clippings, blanks, etc.	5	624	580
Con'd coin	651	156	822
Delivered			
	Ingots		
	Bars, Fine		
	Bars, Standard		
	Bars, Unpurified		
	Bars		
	Sweeps		
Balance		328	341
Apr 11 30, 1908			530
19		328	815
		651	156
			822

**SILVER.**

[illegible]

**CORRECT:**

May 1

190... 5.

Superintendent.

## Acting

Meier und Hofmann

. M I N T

Denver

Melter and Refiner's

April, 1908

Borstadt, Geo.	1	Leave
Bush, W.M.	1	"
Dardis, W.B.	4	"
Howard, M.	3	Sick
Morrison, R.C.	2	Leave
O'Brian, W.S.		30 "
Pughe, J.F.		30 "
Schell, E.P.	1	1 "
Smith, E.S.		1 "
Spencer, C.E.	2	2 "
St. John, F.		3 "
Steadard, X.T.	1	3 "
Taggart, E.B.	1	1 "
Whitaker, E.B.		
Whitehead, E.B.	1	30 "
Wirth, E.P.	1	7 30 "



MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

May 5, 1908.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

Referring to the letter of the Director of the Mint, of date May 2, 1908, relating to samples of forms for the register of deposits received by the Melter and Refiner's department, I beg to make the following statement:

Inasmuch as this department keeps no records of values of deposits, the amended form No. 472 would not be suitable for use in this office. I take the liberty of submitting herewith a sample form which exactly meets our requirements, and which is much better than amended form No. 472, for our use in all particulars. The new sample differs in no essential respect from the one formerly submitted, but is more carefully ruled and arranged. I return herewith the samples attached to the Director's letter.

Very respectfully,

*John H. Betts*  
Melter and Refiner.

# MINT OF THE UNITED STATES AT DENVER.

MELTER AND REFINER'S DEPARTMENT,

May 5, 1908.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

I beg to submit the following list of supplies, estimated to be needed by the Melter and Refiner's department during the fiscal year beginning July 1, 1908:

## Graphite goods:

Crucibles, Dixon's No. 80 Mint Special . . . . .	600
" " No. 14 . . . . .	25
Cups, #3 heavy , . . . . .	200
" #4 " . . . . .	250
" #5 " . . . . .	50
<del>Covers for #80 Mint Special Crucibles . . . . .</del>	<del>100</del>
<del>2 inch rings for ditto . . . . .</del>	<del>275</del>
<del>4 " " " " . . . . .</del>	<del>100</del>
Gold stirrers, round, Mint special for gold . . . . .	100

## Fire clay goods:

Fire brick, standard . . . . .	4000
" " splits . . . . .	200
" " soaps . . . . .	200
Fire clay . . . . .	6000#
Quarter slides (S-170) . . . . .	1000
Furnace bodies (S-163-A,B,C,D) . . . . .	24 sets
Top tiles (S-163-G) . . . . .	80
Hood tile, rights . . . . .	24
" " lefts . . . . .	24
" " tops . . . . .	24
Pedestals, large . . . . .	110
20 gm. clay crucibles , . . . .	300
40 " " " . . . . .	200
4 inch scorifiers . . . . .	100
2-1/2 inch " . . . . .	200
6 inch muffles . . . . .	3

# MINT OF THE UNITED STATES AT DENVER.

## MELTER AND REFINER'S DEPARTMENT,

May 5, 1908.

Hon. Frank M. Downer,  
Superintendent U. S. Mint,  
Denver.

Sir:

I beg to submit the following list of supplies, estimated to be needed by the Melter and Refiner's department during the fiscal year beginning July 1, 1908:

### Graphite goods:

Crucibles, Dixon's No. 80 Mint Special . . . . .	600
" " " No. 14 . . . . .	25
Cups, #3 heavy , . . . . .	200
" #4 " . . . . .	250
" #5 " . . . . .	50
<del>Covers for #80 Mint Special Crucibles , . . . .</del>	<del>100</del>
<del>2 inch rings for ditto . . . . .</del>	<del>275</del>
<del>4 " " " " . . . . .</del>	<del>100</del>
Gold stirrers, round, Mint special for gold . . . . .	100

### Fire clay goods:

Fire brick, standard . . . . .	4000
" " splits . . . . .	200
" " soaps . . . . .	200
Fire clay . . . . .	6000 <sup>#</sup>
Quarter slides (S-170) . . . . .	1000
Furnace bodies (S-163-A,B,C,D) . . . . .	24 sets
Top tiles (S-163-G) . . . . .	80
Hood tile, rights . . . . .	24
" " lefts . . . . .	24
" " tops . . . . .	24
Pedestals, large . . . . .	110
20 gm. clay crucibles , . . . .	300
40 " " " . . . . .	200
4 inch scorifiers . . . . .	100
2-1/2 inch " . . . . .	200
6 inch muffles . . . . .	3

## MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

## Acids and Chemicals:

Hydrochloric acid, commercial (22° Be) . . . . .	30	ton
Nitric acid, commercial, free from chlorine, (38° Be) . . . . .	20	"
Sulphuric acid, commercial (66° Be) . . . . .	6	"
Ammonium hydrate, commercial . . . . .	500	lbs
Hydrochloric acid, C.P. . . . .	100	"
Nitric acid " . . . . .	100	"
Sulphuric acid " . . . . .	50	"
Ammonium hydrate " . . . . .	100	"
Potassium cyanide " . . . . .	10	"
" " commercial . . . . .	10	"
" carbonate " . . . . .	10	"
Sodium " C.P. . . . .	10	"
Potassium nitrate " . . . . .	10	"
Hydrogen peroxide . . . . .	16	"
Phenol Sodique . . . . .	10	"
Copper sulphate . . . . .	100	"
Sulphate of iron . . . . .	8	ton
Crushed rock salt . . . . .	8	"
Gelatine, pure . . . . .	400	lbs
Magnesite . . . . .	100	"
Ammonium chloride . . . . .	100	"
Litharge, C.P. , . . . .	25	"
Test lead " . . . . .	25	"
Zinc, C.P. . . . .	10	"
* Zinc in slabs, commercial..99%.pure . . . . .	8	ton
Mercury . . . . .	225	lbs
Sodium metal . . . . .	3	"
Sodium hydrate, commercial . . . . .	25	"
" " C.P. . . . .	5	"
Potassium hydrate, commercial . . . . .	5	"
Stannous chloride, C.P. . . . .	10	"
Hyposulphite of soda, commercial . . . . .	25	"

## Fluxes:

Borax glass, ground . . . . .	3	ton
Bicarbonate of soda . . . . .	6	"
Nitre . . . . .	800	lbs
Bone ash . . . . .	400	"
Pulverized charcoal, MXX, for gold . . . . .	10	bbles
" " MBXX " silver . . . . .	20	"
* Cryolite, Greenland . . . . .	200	lbs
Silica . . . . .	300	"
Sand, screened . . . . .	5	tons

# MINT OF THE UNITED STATES AT DENVER,

## MELTER AND REFINER'S DEPARTMENT,

Superintendent - 3

### Cloth goods:

* Aprons . . . . .	50 doz.
* Sleeves . . . . .	50 doz prs
* Unbleached muslin . . . . .	10 bolte
* Cheese cloth . . . . .	35 "
* Aprons, asbestos covered, . . . . .	15
Extra heavy striped bed ticking . . . . .	1 bolt
12 oz. white duck, 36" wide . . . . .	50 yds.
* Carpet mitts . . . . .	1100
* Asbestos " . . . . .	100

### Mitts, Gloves

* Buck gloves . . . . .	410 prs.
* Buck mitts . . . . .	24 "

### Rubber goods:

* Rubber gloves, black, 4 inch . . . . .	6 doz prs
* " " white 9 " . . . . .	10 " "
* " gauntlets, heavy, full sleeve, 22 inch . . . . .	6 prs.
" tubing, medium wall, 1/8" to 1-1/2" . . . . .	50 lbs.
" " heavy " " " " . . . . .	50 "
" stoppers, assorted , . . . . .	25 "

### Earthenware and glass goods:

1 gallon china pitchers , . . . . .	1 doz
4 " earthenware pitchers . . . . .	1 "
12 inch china soup plates . . . . .	1 "
8 " " " " . . . . .	1/2 "
6 " " " " . . . . .	1/2 "
Glass tubing, assorted sizes . . . . .	20 lbs.
" rods " " . . . . .	10 "
" test tubes, 8"x 1" . . . . .	5 doz
" " " assorted . . . . .	6 "
" beakers, assorted . . . . .	6 "
" flasks, " . . . . .	4 "

## MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Superintendent - 4

Miscellaneous supplies:

Wood stoppers, assorted sizes . . . . .	2 lbs
10 inch extra heavy seamless tin pans . . . . .	1/2 doz
Brass wire screen, 20, 30, 40 mesh . . . . .	90 sq.
Nickel plated forceps, fine point, non-magnetic . . . . .	6 prs
Ball pein machinist hammer, 2 lb. . . . .	3
Garden hose, 3/4" . . . . .	100 ft
Respirators . . . . .	1 doz
Oilers, brass, 1 pint . . . . .	1 "
"Smooth on" cement . . . . .	2 lbs
Talcum powder . . . . .	25 "
Extra heavy galvanized iron wash tubs . . . . .	2
" " " " " water buckets . . . . .	3
<del>Common lumber</del> . . . . .	<del>3000 ft</del>
Boiler plate steel . . . . .	120 sq.
14 inch Bastard files . . . . .	2 doz
12 oz. wide mouth bottles . . . . .	1/2 "
6 " " " " " " . . . . .	1/2 "
Glass troughs, 12-1/2x8x6 . . . . .	1/2 "
* Light machine oil, for hydraulic press , . . . .	1 bbl
* Machine oil . . . . .	2 gals
* Twine . . . . .	100 lbs
Dust brushes . . . . .	2-1/2 doz
Floor " . . . . .	1-1/2 "
Fibre " . . . . .	1-1/2 "
Sledge handles . . . . .	1/3 "
Pointing trowels . . . . .	1/6 "
Thread, #25 Linen . . . . .	1/2 "
8 inch horn spoons . . . . .	1-1/2 "
Screen posts for Elspass mill . . . . .	1 "
No. 3 long handle, sq. point shovel . . . . .	1/6 "
" " short " " " " " " . . . . .	1/6 "
12 inch monkey wrench . . . . .	1/12 "
8 " " " " " " " " . . . . .	1/12 "
5/16 x 2 flat screw head stove bolts . . . . .	4
16 inch gold pan . . . . .	1/12
16 " amalgamating pan . . . . .	1/12
1/2 " cotton rope . . . . .	50 ft
Hoffman's extra heavy clamps . . . . .	2 doz
Hard drawn copper rods, 1/2 inch square . . . . .	300 ft
" " " " " 1/2 " x 1 inch . . . . .	300 "
* Lard oil . . . . .	4 bbl
Iron turnings . . . . .	1 ton
Grain alcohol . . . . .	5 gals

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Superintendent - 5

Miscellaneous supplies (continued)

Asbestos cement . . . . .	25 lbs.
1/2 inch round aluminum rods, 36" long . . . . .	3 doz
Sheet aluminum . . . . .	3 lbs
* Blacksmith aprons, muleskin, with bib . . . . .	1 doz
* Towelling . . . . .	100 yds.
Sheet lead . . . . .	8 tons
Fine gold molds, 10-1/2x5-3/4x4. . . . .	1-1/2 doz
Brass screen, 60, 80 mesh . . . . .	25 sq.ft.
* Hard rubber rods, special . . . . .	500

\* Samples to accompany all starred articles.

Very respectfully,

*J. H. Ketchick*  
Acting Melter and Refiner.

*John*  
*leg*

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 5

Miscellaneous supplies: (continued)

Asbestos cement	25 lbs.
1/2 inch round aluminum rods, 36" long	3 doz.
Sheet aluminum	3 lbs.
* Blacksmith aprons, muleskin, with bib	1 doz.
* Towelling	100 yds.
Sheet lead	8 tons
Fine gold molds, 10-1/2"x5-3/4"x4"	1-1/2 doz.
Brass screen, 60, 80 mesh	25 sq.ft.
Pure gum pads for copper plate dressing, 4"x6"	1/4 doz.
" " " " " " 6"x6"	1/4 "
* Hard rubber rods, special	500

\* Samples to accompany all starred articles.

Very respectfully,

*John H. Heston*  
Acting Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

• May 14, 1908.

Hon. Frank M. Downer,  
Superintendent, U.S. Mint,  
Denver.

Sir:

Referring to the inquiry in the Director's letter of the 11th inst., in which he states that he would like to be informed of the object of the Refinery Charges, as shown on the sample sheet for the Melter and Refiner's Register of Deposits, I beg to make the following statement:

The Refinery charges are not essential to the completeness of the record. The column "Refinery Charges" was included that we may have a line on the earnings of the refinery as the bullion is sent thereto.

Very respectfully,

*John Herbert*  
Acting Melter and Refiner.

Apl/08

## REFINERY

1. Products: a. Gold  
b. Silver

120,917.05 Fine ozs.  
151,046.40 " "

Total

271,963.45 " "

## 2. Costs:

Totals

Cost per oz.

a. Labor	1500.88	.00551868
b. Crucibles	105.80	.00038902
c. Acids	427.50	.00157190
d. Supplies	240.23	.00088331
e. Mitts, gloves	66.12	.00024512
f. Chemicals	20.00	.00007353
g. Sweeps cellar	0.00	.00000000
h. M. & R. Gen'l	208.34	.00076605
i. Fuel	190.32	.00069979
j. Power	595.28	.00218882
k. Repairs	140.29	.00051584
l. Light, ventilation	95.00	.00034931
m. Incidentals	0.99	.00000364
n. Assays	222.49	.00081808
o. Sick leave, vacation, &c.	33.15	.00012189

Totals

3846.39

.01414304

## 3. New Equipment

378.28

Total expense

4224.67

4. Average cost per fine oz. since July, 1907, .01378776  
5. Crude bullion refined, appx. 407,505.697, gross .00943886  
6. Average cost per gross oz. since July, 1907, .00959866

May 14, 1908

# INGOT MELTING ROOM

1. Amount of bullion melted:		a. Gold, std. ozs.	341,309.890						
		b. Silver "	558,592.440						
		Total	899,902.330						
2. Amt, good ingots:		a. Double eagles	328,501.460						
		b. Half dollars	182,093.100						
		c. Quarter "	327,250.800						
		d. Dimes	40,320.150						
		Total	878,165.510						
3. Cost of ingots:		Gold	:	Silver	:	Total			
		Total	:	Per oz.	:	Total	:	Per oz.	
a. Labor	271.60	.00082678	674.76	.00122758	946.36	.00107765			
b. M. & R. Gen'l	59.79	.00018200	148.54	.00027023	208.33	.00023723			
c. Mitts, gloves	11.75	.00003576	11.75	.00002137	23.50	.00002676			
d. Crucibles	29.28	.00008913	50.60	.00009205	79.88	.00009096			
e. Sweeps cellar	0.00	.00000000	0.00	.00000000	0.00	.00000000			
f. Supplies	51.38	.00015640	82.52	.00015012	133.90	.00015247			
g. Fuel	74.80	.00022770	121.60	.00022122	196.40	.00022364			
h. Power	17.42	.00005302	43.28	.00007873	60.70	.00006912			
i. Light, vent'l'n	7.13	.00002170	17.72	.00003223	24.85	.00002829			
j. Repairs	31.33	.00009537	77.84	.00014161	109.17	.00012431			
k. Incidentals	0.00	.00000000	0.00	.00000000	0.00	.00000000			
l. Sick leave, &c	8.22	.00002502	20.45	.00003720	28.67	.00003264			
Totals		562.70	.00171292	1249.06	.00227240	1811.76	.00206311		
m. Alloy copper		348.54	.00106099	806.41	.00146709	1154.95	.00131518		
Totals, including Alloy Cop.		911.24	.00277391	2055.47	.00373950	2966.71	.00337830		
						32.48			
4. New Equipment									
Total expense						2999.19			

5. Percentage of good ingots to amt. bullion melted:				a. Gold,	96.2
				b. Silver	98.4

6. Average cost per oz. of ingots for 10 months:					
		Gold	Silver	Total	
a. Excluding alloy copper	.00216733	.00236135	.00231018		
b. Including "	.00333262	.00338455	.00337086		

7. Costs distributed as follows:				
a. Double eagles				911.24
b. Half dollars				680.94
c. Quarter "				1223.74
d. Dimes				150.79
Total				\$2966.71

## SWEEPS CELLAR (Not operating)

1. New equipment	22.25
2. Repairs	2.47
total expense	24.72

## DEPOSIT MELTING

Power	16.62
Fuel	83.20
Repairs	7.50

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

May 15, 1908.

Mr. C. M. Gorham,  
Melter and Refiner,  
U. S. Mint San Francisco.

Dear Sir:

Yours of the 12th inst. at hand, asking for leaves of  
Forms 871 and 869. Herewith enclosed are the leaves asked for.

Very respectfully,

*John H. Heston*  
Acting Melter and Refiner.

✓-95. A  
1017

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

May 26, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver, Colo.

Sir:

The following are the weights and dimensions of graphite  
goods as per our estimate:

No. 80 Mint Special Graphite Crucible

Weight, 616 ozs. Troy 42

Height, outside, 16-3/4 in.

" inside, 15-1/4 "

Diam. outside, top, 12 in.

" inside, " 9-3/4 in.

" outside, bottom, 8 "

" inside, " 6-1/2 "

Greatest inside diam., 10-1/2 in., 4 in. below top

" outside " 12-3/4 " " " " "

No. 14 Graphite Crucible

Weight, 127 ozs. Troy 8

Height, outside, 8-1/2 in.

" inside, 7-1/2 "

Diam., outside, top, 6-3/4 in.

" inside, " 5-1/2 "

" outside, bottom, 5-1/2 in.  
" inside " 3-1/2 "

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,


Downer - 2

No. 14 Graphite Crucible (cont'd)

Greatest inside diam., 6 in., 3 in. below top

" outside " 7-1/4 in., 3 in. below top.

Graphite Pouring Cups

	No. 3	No. 4	No. 5
Weight	34 ozs. Troy	40 ozs.	48 ozs.
Height outside	4-3/4 in.	5-1/4 in.	5-1/2
" inside	4-1/4 "	4-3/4 "	5
Diam. outside bottom	4-1/4 "	4-1/4 "	5
Top  corners rounding	5-3/4 " side	6 "	6-3/4
Cup	9/16 in. thick	9/16 "	9/16

Graphite Stirrer, Special Gold

Weight 75 ozs. Troy

Dimensions as per attached sketch

Very respectfully,

*J. H. Hatcher*  
Acting Melter and Refiner

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

May 27, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

On my recent visit to San Francisco, I spent considerable time at the mint; every possible courtesy was extended to me, and I obtained much information concerning matters in which I was greatly interested. Relating to classification of employees, Mr. Sweeney kindly showed me a communication from the Director, under date of March 3, 1908, which, after establishing the compensation for certain positions, closed with the following paragraph, to wit:

"In the new Civil Service Regulations governing appointments in the Mint Service, which have been agreed upon but not yet printed, all Refinery positions other than foreman and Melters in Schedule D will be designated as helpers."

Under date of March 26, 1908, I addressed to you a communication regarding the reclassification of employees which I now desire to amend and more fully present in connection with a readjustment of wages, to conform to the schedule in effect at San Francisco for like services.

M. & R. General

Sch. B. Josiah M. Hetrich, Asst. M. & R.

Sch. C, Sub.2 Farnum St. John, Clerk

" C, " 2 John F. Pughe, Clerk

" D, " 3 Enos P. Schell, Helper

No change in compensation in M. & R. General.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

Refinery

Sch. B Benno P. Wirth, Foreman, no change  
" D, Sub. 2 Herbert D. Bartlett, promotion from skilled workman  
at \$3.75 per day, to assistant foreman at \$5.00  
per day.  
" D " 1 John E. Crary, skilled workman, \$3.75, to \$4.50 per  
day.  
" D " 1 Herbert H. Winn, Helper, \$3.25, to skilled workman  
at \$4.50 per day.  
" D " 3 Burt G. Shields, Helper, \$3.25 to \$4.00 per day.  
" " " " George Borstadt, Jr. Do.  
" " " " Burt H. Taggart, Do.  
" " " " Wm. S. O'Brian, Do.  
" " " " Robert G. Arnold, Do.  
" " " " George N. Spencer, Do.  
" " " " Samuel R. Whitaker, Do.  
" " " " Patrick Ryan, Do.  
" D " 2 Xerxes T. Stoddard, Melter, \$4.00 to \$4.50 per  
" " " " Charles W. Dakin, Melter, no change; gets \$4.50  
" " " " George B. Gray, Melter, \$4.00 to \$4.50 per day

Sweeps Cellar

Sch. D. Sub. 2 Elmer S. Smith, Foreman, \$4.00, to \$5.00 per  
" 1 Harry R. Whitehead, Helper at \$3.25, to skill  
workman at \$4.00 per day.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 3

Ingot Melting Room

Sch. D	Sub. 2	Richard C. Morrison,	Foreman,	no change
"	"	"	" Denver Chaffee, Melter,	\$4.00, to \$4.50 per day
"	"	"	" Wm. M. Bush, Melter,	no change
"	D	3	Michael Howard, Helper,	\$3.25, to \$3.50 per day
"	"	"	" William N. Dardis,	" " " " " "
"	"	"	" Joseph H. Spencer,	" " " " " "

I earnestly recommend the foregoing increases in compensation as my investigations have convinced me that it is fair and just, not only on account of the work done, but as well on account of the cost of living which in Denver is at least as great as in any Mint city in the United States.

Very respectfully,

*Joseph W. Milam*  
Melter and Refiner.

## MELTERS AND REFINERS OF BULLION BALANCES.

## Mint of the United States at DENVER

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of May, 1908.

## GOLD.

Received	Balance	STANDARD OUNCES.				Delivered	Balance	STANDARD OUNCES.			
		May 1	19	1				May 29, 1908	19	1	
Contained in Gold Deposits		332	815	232		Ingots		219	228	780	
Contained in Silver Deposits		68	562	248		Bars, Fine					
Contained in		5	304	685		Bars, Standard					
Clippings, blanks, etc.		89	892	660		Bars, Unparted					
		4	993	200		Sweeps		74	770		
Con'd coin											
		491	568	025				272	264	475	
								491	568	025	

## SILVER.

Received	Balance	STANDARD OUNCES.				Delivered	Balance	STANDARD OUNCES.			
		May 1	19	1				May 29, 1908	19	1	
Contained in Gold Deposits		216	167	32		Ingots		577	862	65	
Contained in Silver Deposits		9	196	52		Bars, Fine					
Contained in		23	890	72		Bars, Standard					
Clippings, blanks, etc.		156	854	15		Bars, Unparted					
		35	018	85		Sweeps					
Con'd coin											
		1	341	127	56			762	485	38	
								1	341	127	56

CORRECT:

June 1, 1908.

Superintendent.

Melter and Refiner.

Denver, Colorado

May, 1903.

Melter and Refiner's

Bush, W.M.  
 Dakin, C.W.  
 Gray, G.B.  
 O'Brian, W.S.  
 Paghe, J.F.  
 Schell, E.P.  
 Shields, B.G.  
 Smith, E.S.  
 Spencer, G.N.  
 Stoddard, X.T.  
 Whitaker, S.R.  
 Whitehead, H.R.  
 Winn, H.H.  
 Wirth, B.P.

SILVER

STANDARD OUNCES

STANDARD OUNCES

491 568 025

Balance May 29, 1903

19

272 284 475  
 491 568 025

May 1

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STANDARD OUNCES

Delivered 15

219 228 780

GOLD

STANDARD OUNCES

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Print of the United States at DENVER

MELTERS AND REFINERS OF BULLION BALANCES

Gold and Silver Bullion balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of May, 1903.

U. S. MINT SERVICE.  
Form No. 68  
Ed. May 1, 1908.

Mint of the United States  
At Denver, June 6, 1908.

The following statement shows in standard ounces the total amount of bullion in the different forms delivered to the Meters of this Department during the month of May, 1908, and the amount of metal returned in ingots, bars, etc., and recovered with the apparent losses and gains:

METAL OPERATED UPON.	WEIGHT OF METAL.			RECOVERY.		APPARENT NET LOSS.	APPARENT TOTAL GAIN.
	DELIVERED TO THE METERS.	RETURNED BY METERS IN INGOTS, BARS.	RETURNED IN TOPS, BARS, CONDENSED.	APPARENT GAIN.	APPARENT LOSS.	FROM SWEETS.	FROM OTHER SOURCES.
Gold Ingots,	216,985.420	212,590.480	4348.880		46.060	39,903	112.164
Gold Bars,							
Silver Ingots,	563,495.270	545,431.100	17,580.300		483.870	482.650	1064.590
Silver Bars,							
TOTALS,	780,480.690	758,021.580	21,929.180		529.930	521,753	1181.774
							1173.597

I certify the above to be a correct statement.

Approved:

Superintendent.

In the presence of the MINT, Washington.

John W. Milburn  
Melter and Refiner

5	915 1/2	73	226	921	64	475	932 1/2	47
6	920	70	227	923 1/2	59	478	903 1/2	82
7	944	44	228	974 1/2	109	487	915 1/2	76
13	902	55	230	919 1/2	71	491	923	62
16	917 1/2	46	239	920	69	500	914	71
17	910 1/2	33	240	898 1/2	90	501	916	66
21	831 1/2	101	242	882	107	502	897	91
22	970	86	243	914	75	509	924 1/2	68
24	853	102	244	870	119	510	895	102
25	819 1/2	116	247	888 1/2	99	515	883	105
34	821	142	248	902	83	516	909 1/2	76 1/2
40	841 1/2	129 1/2	262	906 1/2	83	522	927	59
41	890 1/2	76 1/2	263	923 1/2	67	523	931	54
47	819 1/2	129	265	913	76	527	914	52
48	849 1/2	102	277	879	111	535	926	61
53	901	60	278	905 1/2	80	526	905 1/2	53
55	866	93	279	910 1/2	74	538	928	56
57	862 1/2	83	282	943 1/2	48	539	848	135
60	865	66	283	929 1/2	56	541	928 1/2	50
76	887	90	286	921	48	545	918 1/2	69
78	880	97	289	895	88	547	937	52
79	903	70	295	899	90	548	894 1/2	93
80	920 1/2	54	296	919	69	555	918	57
97	890 1/2	84	303	905	61	559	930 1/2	54
98	905	84	305	919	46			
99	873	108	307	907 1/2	41			
90	929 1/2	53	311	912 1/2	55			
93	910	48	315	890 1/2	100			
99	885 1/2	52	316	910	56			
100	885 1/2	49	317	936 1/2	40			
103	943	33	320	920	65			
104	943 1/2	16	321	877	116			
107	928 1/2	40	322	920	65			
108	897 1/2	74	328	922	66			
113	876	108	341	908 1/2	68			
114	931 1/2	58	342	899	75			
116	919 1/2	59	343	902	70			
120	887 1/2	95	362	887	81			
129	948 1/2	43	364	880	104			
130	935 1/2	46	365	836 1/2	146			
133	937 1/2	36	377	922	65			
134	928	44	378	895	82			
136	938	34	379	920 1/2	63			
140	901 1/2	56	385	917 1/2	38			
142	910 1/2	71	387	901	59			
143	919 1/2	46	402	921	65			
148	921 1/2	63	403	921	66			
149	936 1/2	49	405	906 1/2	84			
154	908	73	406	907	82			
155	859 1/2	111	407	915	73			
167	834	132	411	927	60			
174	901 1/2	79	412	932 1/2	53			
176	864	124	426	916 1/2	53			
181	893	104	427	898	84			
193	920 1/2	60	428	918 1/2	69			
194	941	42	436	918	62			
191	907 1/2	76	437	924	52			
192	918 1/2	51	443	917 1/2	55			
193	899	89	445	899	67			
202	907	81	448	956 1/2	34			
205	902 1/2	85	449	900	65			
206	909 1/2	61	452	915	60			
211	901 1/2	104	453	902 1/2	64			
214	885	113	459	920	45			
215	900 1/2	73	462	899	77			
219	902 1/2	64	463	896 1/2	76			
225	900 1/2	64	464	894	85			

May/08

## REFINERY

1. Product: a. Gold  
b. Silver

107,900.55 Fine ozs.  
157,792.17 " "

Total 265,692.72 " "

## 2. Costs:

	Totals	Cost per oz.
a. Labor	1207.61	.00454513
b. Crucibles	105.80	.00039820
c. Acids	391.10	.00147200
d. Supplies	227.00	.00085437
e. Mitts, gloves, aprons	67.05	.00025235
f. Chemicals	20.00	.00007527
g. Sweeps cellar	0.00	.00000000
h. M. & R. Gen'l	208.33	.00078410
i. Fuel	205.73	.00077431
j. Power	597.74	.00224974
k. Repairs	139.71	.00052583
l. Light & Ventilation	70.00	.00026346
m. Incidentals	0.00	.00000000
n. Assays	227.12	.00085482
p. Sick leave, vacation &c	38.68	.00014558

Totals 3505.87 .01319520

## 3. New Equipment

140.93

Total expense 3646.80

4. Average cost per fine oz. since July 1907 .01372483
5. Crude bullion refined, approximately, 404,812.41 .00866048
6. Average cost per gross oz. since July, 1907 .00949366

June 11/08

May/08

## INGOT MELTING ROOM

1. Amount of bullion melted:	a. Gold, std. ozs.	216,988.420	
	b. Silver " "	553,927.130	
	Total	770,915.550	
2. Amount of good ingots:	a. Double eagles	73,067.410	
	b. Eagles	139,523.070	212,590.480
	c. Half Dollars	335,355.850	
	d. Quar. " "	210,075.250	545,431.100
	Total		758,021.580

3. Cost of ingots:	Gold		Silver		Total	
	Total	Per oz.	Total	Per oz.	Total	Per oz.
a. Labor	226.51	.00106547	679.52	.00124584	906.03	.00119525
b. M. & R. Gen.	52.08	.00024497	156.26	.00028648	208.34	.00027484
c. Mitts, gloves	7.75	.00003645	12.00	.00002200	19.75	.00002305
d. Crucibles	20.08	.00009445	35.20	.00006453	55.28	.00007292
e. Sweeps cellar	18.73	.00008810	106.20	.00019470	124.93	.00016481
f. Supplies	35.50	.00016698	74.12	.00013589	109.62	.00014461
g. Fuel	47.20	.00022202	102.40	.00018774	149.60	.00019735
h. Power	14.50	.00006820	42.51	.00007793	57.01	.00007590
i. Light, ventln	5.00	.00002351	15.00	.00002751	20.00	.00002338
j. Repairs	11.93	.00005611	35.80	.00006563	47.73	.00006296
k. Incidentals	4.25	.00001999	10.00	.00001833	14.25	.00001879
l. Sick leave &c	11.49	.00005404	34.50	.00006325	45.99	.00006067
Totals	455.02	.00214035	1303.51	.00238987	1758.53	.00231989
m. Alloy copper	224.72	.00105705	647.32	.00118680	872.04	.00115047
Totals including copper	679.74	.00319741	1950.83	.00357667	2630.57	.00347031

## 4. New Equipment

52.82

Total expense 2683.39

5. Percentage of good ingots to amt. bullion melted:	a. Gold	97.8
	b. Silver	98.4

## 6. Average cost per oz. of ingots for eleven months:

	Gold	Silver	Total
a. Excluding alloy copper	.00216503	.00236360	.00231097
b. Including " "	.00332110	.00339970	.00337887

## 7. Cost distributed as follows:

a. Double eagles	184.14
b. Eagles	341.97
c. Half dollars	1288.98
d. Quarter dollars	815.48

Total \$2630.57

May/08

## SWEEPS CELLAR

1. Product: a. Gold Std. Ozs. 63.962  
               b. Silver " " 337.644  
               c. Tailings, 7395 avoir. lbs.

## 2. Costs:

a. Labor	52.34
b. Power	16.86
c. Light, vent.	21.29
d. Supplies	1.28
e. Repairs	23.50
f. Incidentals	0.00
g. Sick leave &c	9.66

Total 124.93

h. New Equipment 70.95

Total expense 195.88

## 3. Tailings:

a. Amount avoir. lbs.	7395	12.407
b. Contained gold, std. ozs.		101.886
c. " silver " "		

## 4. Percentage of extraction:

a. Gold	83.7
b. Silver	76.8

## 5. Departments charged as follows:

All to Ingot melting room.

# INVENTORY

July 1, 1908

Melter and Refiner's Department

-----

## M. & R. Office:

- 3 roll top desks
- 1 table
- 4 office chairs
- 1 revolving stool
- 1 - 24 drawer file case
- 1 - 3 compartment wardrobe
- 1 safe
- 2 rugs
- 1 letter press
- 1 " " stand
- 1 " " bath
- 1 Oliver typewriter, cover, and accessories
- 1 Millionaire calculating machine
- 1 Bates numbering machine
- 1 Jupiter pencil pointer
- 2 brass cuspidors
- 2 waste baskets
- 3 desk lamps
- 1 dictionary and stand
- 1 Colt's revolver, .45 calibre
- 1 mirror
- 1 feather duster
- 1 drinking glass
- 1 whisk broom
- 8 ink wells
- 5 cups and sponges
- 10 penholders
- 2 doz. pens
- 4 blue lead pencils
- 1 red " "
- 1 green " "
- 24 black " "
- 5 rulers
- 3 pairs shears
- 4 steel erasers
- 4 rubber "
- 1 bottle paste
- 1 " mucilage
- 1/2 pint ink
- 4 paper weights
- 8 clip-boards
- 6 clips
- 8 rubber stamps
- 2 ink pads
- 18 oil sheets for press book
- 14 blotters " " "
- 50 hand blotters
- 4 pyramids of pins
- 3 pen racks
- 1 book arm-rest

## M. &amp; R. Office (cont'd)

4000 letter-heads, unruled  
 1500 " " ruled  
 900 half " "  
 700 " " unruled  
 250 letter size manifold paper  
 250 legal " "  
 2 doz. carbon sheets

1 refinery ledger in use  
 1 bullion ledger "  
 2 scrap books "  
 2 gold bullion books, form 168, 1 in use  
 1 silver " " " 183 in use  
 1 assayer's account book, stock form, in use  
 4 curren deposits " " " "  
 1 letter press book "  
 2 gold vault registers, form 413-A  
 1 silver " " " 413-B in use  
 1 work-book, form 182  
 1 foreman's record of melts, form 469  
 1 record of sweeps, form 543  
 1 gold deposits sent to refinery, form 338, in use  
 4 computing books  
 1 requisition book, in use  
 1 gold deposit receipt book, in use  
 1 " clippings " " "  
 2 silver " " " 1 in use  
 3 records silver melting, form 181, 1 in use  
 2 " gold " " 185, 1 "  
 1 refinery gold melts, " 871, in use  
 3 memorandum books, stock form "

50 daily statement of operations, form 722  
 3500 work of ingot melting " 829  
 1000 M. & R. Settlement " 773  
 450 anode melt " 896  
 400 granulation " 759  
 80 monthly statement " 219  
 10 daily statement of absence " 546  
 80 monthly " " " 644  
 55 " " " 65  
 1000 melts for parting " 929  
 50 requests for leave " 82-E  
 100 requisitions " 131-E

Getting Gold 1 vol.  
 Metallurgy of silver, gold & mercury, 2 vol.  
 Inter. mineralogy & blow-pipe analysis 1 "  
 Quantitative chemical analysis 2 "  
 Metallurgy of zinc & cadmium 1 "  
 The Metallographist 2 "  
 Richter's Organic chemistry 2 "  
 Caloric power of fuels 1 "  
 Electro-chemical analysis 1 "  
 Manual of assaying 1 "  
 Kent's Mechanical engineer's pocket-book 1 "  
 U.S. Geol. Survey No. 54 1 "  
 7 reports of Director of mint 7 "  
 Annual report production precious metals 1 "

### Make-up Room:

- 2 flat top desks
- 1 office chair
- 2 stools
- 1 No. 12 - 8000 oz. bullion balance
- 1 " 2 - 4000 " " "
- 1 clippings pan & counterpoise, #12 balance
- 1 small pan & " " "
- 1 " " " #2 "
- 2 sets weights, .01 oz. to 300 ozs.
- 2 - 12" electric fans
- 7 trucks
- 6 clippings boxes, copper lined
- 19 ingot " " "
- 3 " " unlined
- 15 copper lock boxes
- 1 hammer
- 1 set steel numbers
- 1 dust pan and brush
- 1 floor brush
- 1 feather duster
- 1 - three compartment steel locker
- 1 vault step

### Refinery:

- 1 water-cooled rolling mill
- 1 - 200 ton hydraulic press
- 2 motor generator sets and switch board, large
- 1 " " " " " small
- 1 - 3/4 H.P. motor for gold cells
- 1 - 1/6 " " in laboratory
- 1 - 3/4 " " for silver cells
- 1 - 7-1/2 H.P. motor on elevator
- 1 - 7-1/2 " " with Chilean mill
- 1 - 1/4 H.P. exhaust fan for motor
- 1 - 1/8 " " " " "
- 1 microscope
- 1 analytical balance
- 1 assay "
- 1 pulp "
- 1 three foot "
- 1 cupel furnace
- 1 crucible melting furnace
- 1 portable voltmeter
- 1 " ampmeter
- 1 pyrometer with Heraeus element
- 1 Alberine stone top table for weighing
- 1 " " " " laboratory
- 1 plate glass hood
- 1 office desk
- 2 " chairs
- 1 book case
- Laboratory supplies, consisting of acids, salts and apparatus
- Platinum ware--entire list
- 85 graphite plates
- 175 porcelain rods
- 10 " acid jars
- 6 " filters
- 2 " jars, small
- 35 " gold cells

Refinery (cont'd)

23 earthenware silver cells  
 1 " acid jar with cock  
 2 " supply tanks (silver cells)  
 5 " filters  
 3 " acid jars  
 10 " pitchers  
 75 porous cells  
 4 Rockwell Eng. Co. melting furnaces  
 1 reverberatory furnace  
 2 gold boiling furnaces  
 109 No. 4 cups  
 368 " 3 "  
 269 " 2 "  
 305 - 4" rings  
 287 - 2" "  
 46 gold stirrers  
 34 flat "  
 350 crucible lids  
 35 quarter slides  
 39 fire brick furnace sides  
 11 " " " tops  
 16 " " " arches  
 8 sets fire brick tile for oval furnace (new style)  
 13 tops " " " " " "  
 10 pedestals, large  
 22 " small  
 25 carb. burner tile  
 10 fire brick burner tile  
 2 dumping tables  
 4 pouring benches  
 6 furnace hoods  
 4 charcoal pans  
 2 slag "  
 2 cone moulds, large  
 4 ash cans  
 3 shoe moulds  
 36 gold anode moulds  
 12 - 500 oz. gold moulds  
 12 silver merchant bar moulds  
 12 " anode "  
 6 " fine, 1000 oz. "  
 24 - 250 oz. gold "  
 35 ingot boxes  
 4 clip "  
 4 prs pouring tongs  
 1 " ring "  
 2 " small bar charging tongs  
 1 " stirring tongs  
 3 " pick-up "  
 1 " crucible "  
 4 furnace pokers  
 3 cuspidors  
 2 mirrors  
 Tools, consisting of wrenches, screw drivers, etc.  
 7 prs. white rubber gloves  
 12 " asbestos mitts  
 14 " black rubber gloves  
 10 " buck gloves  
 15 trucks, large and small  
 2 trucks for ingot rolling  
 1/2 bbl powdered charcoal  
 2 " gran. "

## Refinery (cont'd)

200 lbs. zinc  
150 " silica  
500 " sulphuric acid  
700 " nitric "  
1500 " hydrochloric acid  
400 " iron sulphate  
500 " scrap iron  
25 gals. lard oil  
40 perforated hard rubber baskets  
20 hard rubber propellers  
1 box for holding fluxes  
1 closet for supplies  
1 desk, melting room  
3 lead lined dipping tanks  
2 slag pots  
4 smelter ladles  
1 silver chloride filter-wood  
2 lead lined filters, wood  
1 steam shell, silver tank  
1 lead lined copper tank  
4 lead baskets

## Ingot Melting Room

1 topping shears  
8 Rockwell furnaces  
5 pouring benches  
2 dumping benches  
28 moulds, double eagle, 2 sets  
14 " Eagle 1 "  
18 " half eagle 1 "  
56 " half dollar 4 "  
54 " quarter " 3 "  
19 " dime 1 set and 1  
24 shoe moulds  
7 pairs iron tongs, gold bar  
2 " " " silver bar  
5 " " " pouring  
3 " " " gold stirrer  
4 " " " floor grate  
3 " " " crucible  
5 " copper " ingot  
1 mould iron, conical, 12"  
1 " " " 10"  
2 " " " 8"  
1 " " " 6  
12 sheet iron scoops  
12 pokers "  
1350 sq. ft. floor grating  
3 waste cans, 15x24, round  
3 charcoal pans, Russia iron  
2 " " sheet "  
6 slag pans " "  
12 skimming pans " "  
2 grease pans " "  
8 furnace hoods copper  
2 stirring guards  
1 stamping bench  
1 filing bench  
2 " vises

Ingot room (cont'd)

1 case for assay samples  
 1 - 4 compartment locker, oak  
 1 - 4 " flux bin  
 1 water cooler  
 1 bench vise  
 1 ingot stand, oak, sheet copper top  
 2 sets pickling tanks, lead lined  
 2 pickling racks, copper  
 1 truck, large  
 1 truck, small, copper covered top  
 1 oil tank, storage for lard oil  
 2 bundling presses for clippings  
 6 galvanized iron water pails  
 12 silver stirrers  
 4 trowels  
 1 sledge hammer  
 " handles  
 8 hand hammers  
 3 brick "  
 2 monkey wrenches, 14"  
 1 " " 10"  
 1 stillson " 10"  
 2 screw drivers  
 6 cold chisels  
 4 crucible scrapers, steel  
 1 crow bar  
 2 oil cans, small  
 2 extension lights  
 2 box screens, 24"x24"  
 1 pr. outside calipers  
 2 " pliers  
 1 magnet, 6"  
 1 extension divider, 7"  
 2 electric fans  
 1 roll top desk  
 30,688 lbs. alloy copper  
 2 benches for clippings boxes  
 1 lead lined sink  
 1 mirror  
 1 towel roller  
 1 chair  
 20 granulation copper cups  
 1 glass ink well  
 10 No. 80 graphite crucibles  
 31 No. 14 " "  
 10 No. 4 pouring cups  
 47 No. 2 " "  
 5 - 4" rings  
 16 2" "  
 2 gold stirrers  
 4 floor brushes  
 3 hand "  
 4 fibre "  
 2 wire "  
 9 cleaning " brass  
 22 prs. buck gloves  
 12 asbestos mitts  
 44 carpet mitts  
 76 aprons  
 2 asbestos aprons  
 88 prs. sleeves  
 1/2 bolt cheese cloth  
 30 - 14" flat bastard files  
 5 gals. lard oil

3  
 6 2147  
 26 71

1/2 bbl. charcoal  
 10 lbs. soda bicarb.  
 50 lbs. borax glass  
 300 lbs. nitre  
 15 sq.ft. screen wire brass, 40 mesh  
 85 ft. manila rope, 1/2"

Sweepa Cellar:

1 Elspass mill, complete  
 - 15 H.P. motor  
 1 - 2 H.P. motor  
 1 #3 centrifugal pump  
 1 electric fan  
 2 steel tanks, 16"x4.5'x16'  
 1 Pierce amalgamator, complete  
 1 copper amalgamating plate, 2'3"x 8'6"  
 1 amalgamating pan  
 1 gold pan  
 1 steam drier, 4'6"x 10'6" x 8"  
 1 iron wheelbarrow  
 1 piece 40 mesh copper screen, 36"x 60"  
 2 prs. rubber boots  
 3 galvanized iron pails  
 4 tin sample pans  
 4 " sampling pans  
 1 " sampler  
 1 #3 short handle shovel  
 2 #3 long " "  
 1 steel pick  
 15 ft. 1" rubber hose  
 1 platform broom  
 1 ex. heavy mill broom  
 1 qt. copper oil can  
 1 small " " "  
 1 - 3-1/2 lb. hammer  
 1 carpenter hammer  
 1 24" T. wrench  
 1 10" monkey wrench  
 1 16" " "  
 2 - 3/4" and 1-1/4" S wrenches  
 1 large mill S wrench  
 1 iron mortar and pestle  
 1 - 3000 lb. Fairbanks scale  
 2 - 16" flat files  
 1 - 16" round files  
 2 yds. heavy bed ticking  
 1 lb. metallic sodium  
 3 - 10 lb. cans caustic soda  
 5 lbs. potassium cyanide  
 100 lbs. quicksilver  
 6 - 6" large mouth glass bottles  
 5 - 4" " " "  
 4 - 6" heavy china plates  
 2 galvanized iron wash tubs  
 1 - 2 pint iron retort  
 1 - 4 " " "  
 1 - 6 " " "  
 350 heavy duck canvas sacks  
 100 medium " " "  
 60 ft. 3" ex. heavy iron pipe  
 25 ft. 1/2" asbestos pipe covering  
 1 box assorted pipe fittings  
 3 horn spoons  
 30 ft. 2" ditto

Denver

Melter and Refiner's

, June, 1908

Arnold, R.G.	9			Leave
Bartlett, H.D.	14			"
Borstadt, Geo	9			"
Bush, W.M.	10			"
Chaffee, I.	11	2		"
Crary, J.E.	9			"
Dakin, C.W.	9			"
Dardis, W.I.	11			"
Gray, G.B.	9			"
Hetrich, J.M. (detailed on 11th to San Francisco, official busine..)				
Howard, M.	12			Leave
Morrison, R.	10	4		"
O'Brian, W.S.	7			"
Pughe, J.F.	1	1		"
Ryan, P.	1			"
Schell, E.P.	13	1	30	"
Shields, B.G.	12			"
Smith, E.S.	5			"
Spencer, G.N.	5			"
St. John, F.		1	30	"
Stoddard, X.T.	6			"
Taggart, B.H.	9			"
Whitaker, S.R.	9			"
Whitehead, H.R.	4	2		"
Winn, H.H.	9	1		"
Wirth, B.P.	1			"

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

July 1, 1908.

RECEIVED of Frank M. Downer, Superintendent of the Mint of the United States at Denver, in redelivery after settlement, June 30, 1908, one hundred and seventy-eight thousand five hundred and eighty-eight and eighty-seven thousandths standard ounces of gold, and three hundred and thirty-three thousand eight hundred and nineteen and twenty-six hundredths standard ounces of silver, itemized as follows:

	Standard Ounces Gold	Silver
Gold and Silver deposits ---	67,533.367	33,010.96
Mint Fine Silver -----		134,161.95
Omaha " " -----		69,589.13
Refinery Settlement, Gold --	65,154.386	4,005.65
" " Silver- -----	17,284.602	82,682.06
" " Copper- -----	1,003.282	
Mass Melts -----	25,989.170	8,243.05
Assayer's Bars -----	379.146	507.36
Gold Ingot samples -----	105.730	
Proof Gold -----	60.778	
" Silver -----		237.66
Experimentals -----	1,062.042	1,381.44
Gold tree -----	15.584	
Totals -----	178,588.087	333,819.26

*James Wilson*  
Melter and Refiner.

U. S. MINT SERVICE.  
Form No. 219.  
Ed. Feb. 3-00-500-8 x 10 1/2

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at Denver

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of June, 1908

GOLD.

Received	June 1 19	STANDARD OUNCES.			Delivered	STANDARD OUNCES.		
Balance		272	264	475	Ingots	78	853	270
Contained in Gold Deposits		40	134	577	Bars, Fine			
Contained in Silver Deposits		3	333	868	Bars, Standard			
Contained in			13	791	Bars, Unparted			
Clippings, blanks, etc.		32	348	930	Bars		224	292
	Surplus at Settlement		489	448	Sweeps			
		348	584	889	Balance del'd to Set'm't Com'n	269	507	327
						348	584	889

SILVER.

Received	June 1 19	STANDARD OUNCES.			Delivered	STANDARD OUNCES.		
Balance		762	485	38	Ingots			
Contained in Gold Deposits		5	914	92	Bars, Fine			
Contained in Silver Deposits		14	475	94	Bars, Standard			
Contained in			7	63	Bars, Unparted			
Clippings, blanks, etc.		44	614	45	Bars	1	050	78
	Sweeps bar	26	086	70	Sweeps			
	Con'd coin surplus at Settlement	11	438	52	Balance del'd to Set'm't Com'n	863	972	76
		865	023	54		865	023	54

CORRECT:

July 1

1908

Superintendent.

Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

July 11<sup>th</sup>, 1908.

Statement of Silver on hand at close of business this day:

Fine silver	200,751.08	standard oz's.
In deposits and settlement bars	<del>11,100.00</del>	" "
Total	212,852.08	" "

Respectfully submitted.

*For Mithum*  
Melter and Refiner

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

*July 13<sup>th</sup>*, 1908.

Hon. Frank M. Sawyer  
Supt. U. S. Mint, Denver, Colo.

Sir:

I have the honor of recommending the appointment  
of Arthur R. Hamppell as a helper in the Ingot  
Melting room, to take effect on July 20<sup>th</sup> 1908.

Respectfully

Joe. W. Wilson

Melter and Refiner

THE MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

July 18, 1908.

Statement of Silver on hand at close of business this day:

Fine silver 203.751.08 Std. Oz's.

Clippings 10.757.95 " "

In deposits 161.164.44 " "

Total 375.673.47 " "

Respectfully submitted:

Joel W. Wilson

Melter and Refiner

THE MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

*July 25<sup>th</sup>*, 190*8*.

Statement of Silver on hand at close of business this day:

Fine silver 162,071.15

Sugats 85,400.13

Clippings 11,322.56

Spec. coin 15,814.00

In Receipts 170,741.29

~~170,741.29~~

Total 205,348.74

Respectfully submitted,

*John W. Wilson*

Natta Refiner

THE MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 1st, 1908.

Statement of Silver on hand at close of business this day:

Fine silver 152,066.61

Ingot 57,077.30

Clippings 7,002.55

Prod. coin 15,459.95

In deposits 221,779.07

Total 456,375.48 Std. ozs.

Respectfully submitted:

Joe W. Wilson

Melter and Refiner.

U. S. Navy Bureau,  
Form No. 919,  
Ed. Feb. 5-66-333. - 5 x 10 1/4.

MELTERS AND REFINERS OF BULLION BALANCES.

## Mint of the United States at

*Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the year ending July 1, 1901*

**GOLD**

[illegible]

*Phig. d. to balance of D. byrot.*

**SILVER.**

RECEIVED		STANDARD OUNCES.		STANDARD OUNCES.	
Balance	July 1 1901	523	819	26	206
Contained in Gold Deposits		15	276	514	505
Contained in Silver Deposits		22	095	06	20
Contained in Seattle red deposits		38	2201	69	
Clippings, blanks, etc.		151	703	00	
Contained in Balances			949	03	
" " " Condensed Coin		78	320	90	
" " " Gold exchange bars			20	76	
" " " balance			100	30	
		607	348	36	441
					040
					86
					203
					86

### Comment:

August 18 1908

*Superintendent.*

Mettler and Refiner.

Wm. Wilson

Mint

Denver

Melter and Refiner's

July, 1908

Arnold, R.G.	14			Leave
Bartlett, H.D.	14			"
Borstadt, G.	14			"
Bush, Wm.	14			"
Chaffee, D.	16			"
Grary, J.H.	14			"
Dakin, C.W.	14			"
Dardis, W.N.	14			"
Gray, G.B.	14			"
Hetrich, J.M., Detailed to San Francisco, on annual settlement				
Howard, M.	14		30	Leave
O'Prrian, W.S.	14			"
Pughe, J.F.	4	3	30	"
Ryan, P.	14			"
Schell, E.F.	11	4		"
Shields, B.G.	14			"
Smith, E.S.	14			"
Spencer, G.N.	14			"
St. John, F.	22	4		"
Stoddard, X.T.	14			"
Taggart, B.H.	14			"
Whitaker, S.R.				"
Whitehead, H.R.	1			"
Winn, H.H.	17			"
Wirth, B.P.	14			"

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 10, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

Responding to your request of this a.m. that I advise you in detail as to the number of employees in the Refinery and their respective duties, I take pleasure in presenting the following statement:

Our Refinery force consists of fifteen employees, viz.: 1 Foreman, 2 Cell men, 3 Melters, and 9 Helpers; and each has his particular duty to perform, towit:

The Foreman is given full authority in the Refinery, and is held responsible for the proper conduct of the work.

One of the Cell men has charge of the gold cells on the day shift, and it is his duty to see that they are in proper working order in every way; to put in anodes and take out cathodes as may be necessary; to change the electrolyte when it becomes too foul for economical use, and on such occasions to remove the slimes from the cells. The other cell man has the same duties to perform with the silver cells.

The melting room has four furnaces, three of which are used for regular melting; and each is in charge of a melter; the fourth furnace is used exclusively for making sweats, and is run by the melters in connection with their other work. In the melting room

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

We use three helpers which is as small a number as can be used for a bench crew, and they are kept quite busy all the time, as, in addition to their bench work which is almost continuous (working three furnaces), they do the necessary trucking of material between the refinery vault and the melting room and also operate a small Chili mill for the grinding of various slags. On each night shift we have two helpers, one for the gold cells and one for the silver cells, and their duties consist of putting in anodes, taking out cathodes and keeping the cells operating to their capacity. This leaves us two regular day helpers whose duties are various: they wash the gold and silver cathodes, precipitate solutions, roll cathode ingots, and cut the strips into proper cathode lengths, assist the foreman in delivering fine gold and silver to the Melter and Refiner's vault and receiving therefrom the anode melts; they also get up the refinery supplies (including all acids) from the basement, and in general assist at anything necessary to be done.

With this crew, as you will observe from the duties specified, it is quite necessary that each employee be so constituted that he can work all the time; sickness is hardly permissible, because when an employee is in any way incapacitated, we have to take a man from some other duty and use him as a substitute in the refinery. Fortunately we have a splendid bunch of healthy and intelligent men, and are not called upon often to do any substituting.

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Superintendent -- \$

Trusting this furnishes the desired information, I remain,

Respectfully,

*Wm. L. Milburn*

Melter and Refiner.

July/08

# REFINERY

1. Product: a. Gold

29,693.31 Fine ounces

2. Costs:

	Totals	Cost per oz.
a. Labor	652.49	.02197431
b. Crucibles	0.00	.00000000
c. Acids	42.11	.00141816
d. Supplies	44.05	.00148349
e. Mitts, gloves aprons	19.75	.00066513
f. Chemicals	0.00	.00000000
g. Sweeps cellar	30.00	.00101032
h. M. & R. Gen'l	125.00	.00420970
i. Fuel	55.20	.00185900
j. Power	226.53	.00762899
k. Repairs	71.89	.00242108
l. Light & vent'l'n	80.00	.00269420
m. Incidentals	11.55	.00038897
n. Assays	113.46	.00392209
o. Sick leave, &c	1195.09	.04024778
Totals	2670.12	.08992328

3. New equipment

278.82

Total expense

2948.94

4. Average cost per fine ounce for fiscal year

.08992328

5. Crude bullion refined, approximately, 32,630.00

6. Average cost per gross oz. for fiscal year

.08183021

P. S. Refinery resumed operations July 20, 1908.

July/08

## INGOT ROOM

1. Amount of bullion melted, all silver, Std. oza.	259,944.13
2. Amount of good ingots, a. Half dollars	24,239.90
b. Quarter "	230,609.65
Total	<u>254,849.55</u>

3. Cost of ingots:	Total	Cost per oz.
a. Labor	306.49	.01202631
b. M. & R. Gen'l	125.00	.00490485
c. Mitts & gloves	13.62	.00053443
d. Crucibles	27.60	.00108299
e. Sweeps cellar	86.51	.00339455
f. Supplies	49.63	.00194742
g. Fuel	60.00	.00235433
h. Power	61.21	.00240180
i. Light & ventilation	20.00	.00078477
j. Repairs	38.58	.00151383
k. Incidentals	0.00	.00000000
l. Sick leave, vacation & holidays	578.34	.02269338
Totals	1366.98	.05363870
m. Alloy copper	81.30	.00319011
Total including alloy copper	1448.28	.05682882
4. New equipment	51.90	
Total expense	1500.18	

5. Percentage of good ingots to amount bullion melted,	98
6. Cost distributed as follows:	a. Half dollars 137.88
	b. Quarter " <u>1310.40</u>
Total	1448.28

P.S. Ingot room resumed operations on July 20, 1908.

July/08

## SWEEPS CELLAR

1. Product:	a. Gold, std. ozs.	16.195	
	b. Silver " "	8.73	
	c. Tailings, avoird. lbs.		1891

## 2. Costs:

a. Labor	41.50
b. Power	5.34
c. Light & ventilation	7.21
d. Supplies	.64
e. Repairs	11.37
f. Incidentals	0.00
g. Sick leave, etc.	<u>69.75</u>

Total	135.81
-------	--------

h. New Equipment	<u>152.11</u>
------------------	---------------

Total expense	287.92
---------------	--------

## 3. Tailings:

a. Amount, avoird. lbs.	1891
b. Contained gold, std. ozs.	10.474
c. " silver "	14.52

## 4. Percentage of extraction:

a. Gold	60.7
b. Silver	37.5

## 5. Departments charged as follows:

a. Ingot melting room	86.51
b. Refinery	30.00
c. Helena Assay office	<u>19.30</u>

Total	135.81
-------	--------

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

August 12, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

That you may be fully advised as to the condition of our fine metal supply, which controls the making of ingots, I have the honor of presenting a statement of facts relating thereto, together with my observations concerning a remedy.

On this date we have on hand 59,603.38 standard ounces of fine silver and 104,328.819 standard ounces of fine gold, which is our total stock of ingot making metals. Including the clippings to be returned from the Coiner, this will give us about four days' work on silver and a week's work on gold.

The Refinery is producing about 42,000 standard ounces of fine gold per week, and approximately 46,000 standard ounces of fine silver. Of the latter, however, about 30,000 ounces are used for parting purposes, so that we have available for ingot work from the Refinery product only about 16,000 standard ounces per week of fine silver. At the present time we are working all our silver cells (eight in number) and twelve gold cells; owing to the character of the bullion, we cannot increase the latter. Therefore it is obvious that, unless there be a change in conditions by the latter part of the month, we will be unable to keep the Ingot room operating at its present capacity more than from

## MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

one-half to two-thirds of the time.

There are three methods of gaining relief: First, if we could procure a sufficient quantity of high grade gold bullion, like the Omaha A. S & R. bars, it would enable us to fine up the bullion on hand so that it would make suitable anodes for the gold cells, and we could then increase the number of cells so that we could produce approximately 80,000 standard ounces of fine gold per week; or, second, if we could get, say, a million ounces of dore bars, so that it would not be necessary for us to use any of our Refinery fine silver for parting purposes, then we could get from the Refinery a sufficient amount of fine gold and silver to keep us going continuously at a moderate pace. Of these two propositions, the first meets with the objection that it would use up our bullion much faster than we receive it and so it would again be only a question of time until we would need more help. The second proposition, however, appeals to me very strongly. If we could procure, say, a million or more ounces of dore bars, it would be the most economical and satisfactory way out of our present dilemma--economical, because it would enable us to be working wholly on original bullion on which charges are collected; and satisfactory, because it will keep our refinery busy and enable us to make a Refinery production sufficient to keep the Ingot room at work at about our present speed.

The third method of securing relief is the purchase of

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 3

fine silver for ingot work.

Respectfully submitted,

*John Wilson*  
Melter and Refiner.

U. S. MINT SERVICE.  
Form No. 313.  
Ed. Feb. 1900-500-8 x 10 1/2.

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at DENVER

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of AUGUST, 1908.

GOLD.

Received	Balance	STANDARD OUNCES.				Delivered	Balance	STANDARD OUNCES.			
		Aug. 1	19			Aug. 31, 1908	19				
Contained in Gold Deposits		555	489	162		Ingots		48	815	080	
Contained in Silver Deposits		59	666	428		Bars, Fine					
Contained in		5	074	078		Bars, Standard					
Chippings, blanks, etc.		186	241	167		Bars, Unparted					
		30	101	720		Bars					
Seattle Dep.			343	320		Sweeps					
Com'd coin			35	616							
Gold Exchg. bars			26	670							
Helena Sweeps											
		836	978	161				788	163	081	
								836	978	161	

SILVER.

Received	Balance	STANDARD OUNCES.				Delivered	Balance	STANDARD OUNCES.			
		Aug. 1	19			Aug. 31, 1908	19				
Contained in Gold Deposits		441	040	86		Ingots		371	945	20	
Contained in Silver Deposits		8	357	65		Bars, Fine					
Contained in		25	647	77		Bars, Standard					
Chippings, blanks, etc.		29	444	14		Bars, Unparted					
		113	350	65		Bars					
Seattle Dep.						Sweeps					
Com'd coin			030	55							
Gold Exchg. bars			6	32							
Helena Sweeps			23	26							
		685	901	21				313	956	01	
								685	901	21	

CORRECT:

Superintendent.

September 1, 1908.

*Benjamin*  
Melter and Refiner.

## M I N T

## D E N V E R

Melter and Refiner's

Aug. 1908

Bartlett, H.D.	3	Sick
Bush, Wm.	30	Leave
Chaffee, D.	4	"
Crary, J.H.	1	"
Hetrich, J.M.	4	Official Leave, San Fran. Set'm
Lindhard, J.A.	1	Sick
Pughe, J.F.	10	Leave
St. John, F.	2	"
Whitehead, H.R.	2	"
Winn, H.H.	1	"

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

September 8, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

For nearly a year, one of our Refinery helpers, Burt G. Shields, has been in such a physical condition that he could not well stand the necessary night work of his position. On April 1st, 1908, I transferred him temporarily to the Ingot melting room (as the wages of all helpers at that time was the same), and he has worked there ever since.

In June following, the Director raised the wages of Refinery helpers to \$4.00 per day, and in our list of names of such Refinery helpers forwarded to the Bureau at that time I included the name of Shields as that was where he properly belonged, and where he had rendered satisfactory service as a workman, and I believed that a change of work for a few months would effect a restoration to such a condition that he could resume his work in the Refinery. But, about July 20, when we first commenced operations in our department after settlement, I questioned Mr. Shields as to his condition, and he informed me that he was some better, but after consulting his doctor he said he did not believe he could resume his old position and perform the required night work of a Refinery helper (the Refinery helpers work in three shifts, changing monthly); so I informed him that

MINT OF THE UNITED STATES AT DENVER,  
Superintendent - 2 MELTER AND REFINER'S DEPARTMENT,

it would be necessary to transfer him permanently to the Ingot room and probably reduce his wages accordingly. He was apparently satisfied with this arrangement, and so I transferred him to the Ingot room, and to fill the vacancy in the Refinery I transferred William N. Dardis from the position of Ingot room helper to that of Refinery helper, informing him that, upon approval by the Director, his pay would be increased to \$4.00 per day, the same as all other Refinery helpers. You no doubt remember our discussion of this matter in the latter part of July, and I now desire to present it officially for your action. Therefore, in the interest of the discipline of this department, as well as fairness to the interested parties and those with whom they are associated in like work, I earnestly recommend:

First, That William N. Dardis be placed permanently upon the Refinery roll as a helper, and that his compensation be increased from \$3.25 to \$4.00 per day;

Second, That Burt G. Shields be transferred permanently from the position of Refinery helper to that of Ingot room helper, and, if necessary, that his compensation be reduced from \$4.00 per day to \$3.25 per day; and,

Third, That the transfers and necessary change in wages be approved to take effect on September 16, 1908.

Respectfully,

*J. C. Milson*  
Melter and Refiner.

1. Product:	a. Gold	179,510.88	Fine	ozs.
	b. Silver	115,236.00	"	"
	Total	294,746.88	"	"

2. Costs:	Totals	Cost per oz.
a. Labor	1919.83	.00651348
b. Crucibles	0.00	.00000000
c. Acids	496.43	.00168425
d. Supplies	185.37	.00062891
e. Mitts, gloves, aprons	51.25	.00017387
f. Chemicals	10.00	.00003392
g. Sweeps cellar	182.18	.00061808
h. M. & R. Gen'l	195.56	.00066348
i. Fuel	198.40	.00067311
j. Power	406.53	.00137925
k. Repairs	284.80	.00096625
l. Light & Ventilation	78.00	.00026463
m. Incidentals	0.00	.00000000
n. Assays	285.63	.00096906
o. Sick leave, vacation &c	63.50	.00021543
Totals	4357.48	.01478380

3. New Equipment	70.63
Total expense	4428.11

4. Average cose per fine ounce for fiscal year	.02166070
5. Crude bullion refined, approx. 410,664.70	.01061081
6. Average cost per gross ounce for fiscal year	.01585313

Aug/08

### SWEEPS CELLAR

Not operating on sweeps -- making repairs and changes.

1. Product - nothing	
2. Costs:	
a. Labor	166.38
b. Power	6.30
c. Light & Vent.	17.80
d. Supplies	0.00
e. Repairs	165.76
f. Incidentals	0.00
g. Sick leave &c	8.12
Total	364.36

h. New equipment	61.10
Total expense	425.46

3. Departments charged as follows:

a. Refinery:	212.73
b. Ingot room	212.73
Total	425.46

Aug/08

## INGOT MELTING

1. Amount of bullion melted	a. Gold	225,704.79	std. ozs.
	b. Silver	356,382.95	" "
	Total	582,087.74	" "
2. Amount of good ingots	a. Eagles	219,941.07	
	b. Quarter dols.	347,668.10	
	Total	567,609.17	

3. Cost of Ingots:	Gold		Silver		Total	
	Total	Per oz.	Total	Per oz.	Total	Per oz.
a. Labor	305.09	.00138714	547.12	.00157368	852.21	.00150140
b. M.&R.Gen.	70.00	.00031826	125.55	.00036112	195.55	.00034451
c. Mitts, gloves	9.58	.00004355	8.75	.00002516	18.33	.00003229
d. Crucibles	1.68	.00000763	9.20	.00002646	10.88	.00001916
e. Swp. Cellar	65.22	.00029653	116.96	.00033641	182.18	.00032096
f. Supplies	37.55	.00017072	39.31	.00011306	76.86	.00013541
g. Fuel	53.60	.00024370	86.80	.00024966	140.40	.00024735
h. Power	19.19	.00008725	34.42	.00009900	53.61	.00009444
i. Light & Ven.	7.16	.00003255	12.84	.00003693	20.00	.00003523
j. Repairs	14.44	.00006565	25.89	.00007446	40.33	.00007105
k. Incidentals	0.00	.00000000	0.00	.00000000	0.00	.00000000
l. Sick lv. &c	18.08	.00008220	32.42	.00009324	50.50	.00008896
Totals	601.59	.00273523	1039.26	.00298923	1640.85	.00289080
m. Alloy cop.	188.06	.00085504	178.47	.00051353	366.53	.00064574
Totals including copper	789.65	.00359027	1217.73	.00350256	2007.38	.00353655

4. New Equipment

30.55

Total expense

2037.93

5. Percentage of good ingots to amt. bullion melted: a. Gold 97.4  
b. Silver 97.5

6. Average cost per ounce of ingots for two months:

	Gold	Silver	Total
a. Excluding alloy copper	.00273523	.00399364	.00365712
b. Including " "	.00359028	.00442477	.00420162

7. Cost distributed as follows: a. Eagles 789.65  
b. Quarter Dollars 1217.73  
Total 2007.38

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

September 25, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

Requisition is hereby made for the following blank books and forms for the use of Melter and Refiner's Department during the ensuing ten months:

200 - Form 722, Daily Statement of operations (sample attached)  
1000 - " 773, Melter and Refiner's Settlement "  
1000 - " 929, Melts for Parting "

1 - Form 183, Receipts and Delivery of Silver Bullion,  
pages 8x10-1/2, 75 leaves to book.  
4 - Form 963, Melter and Refiner's Register of Deposits,  
pages 10-1/2x16, 80 leaves to book.

Respectfully,

*Joel Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

September 25, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

With reference to the recent shipment of graphite goods by J. H. Gautier & Company, we find two of the No. 80 crucibles broken; and the difference in the size of the No. 5 pouring cups from that specified in your communication of May 26th to said company is so great that we cannot use said pouring cups for the purpose for which they were ordered. But, having received them, we can make use of them in our copper furnace, but hereafter cannot receive any more of those dimensions for our regular <sup>melting</sup> work in the refinery.

Your communication above referred to called for certain dimensions of said pouring cups, the figures of which I here present, the first figures being your specifications, and the second the figures of the goods received.

Weight, 4.8 ozs., Troy; 80-3/4 ozs., Troy  
Height outside, 5-1/2 inches; 6-1/8 inches  
Height inside, 5 inches; 5 inches  
Diameter outside bottom, 5 inches; 5-3/4 inches  
Side measurement, 6-3/4 inches; 7 inches  
Thickness, 9/16 inch; 11/16 inch  
Thickness of bottom of goods received, 1-1/8 inches.

Respectfully,

*John Wilson*

Melter and Refiner.

Minut of the United States at D E N V E R

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of September, 1908.

**GOLD.**

[illegible]

**SILVER**

[illegible]

**CORRECT:**

October 1 1908

Superintendent.

Melter and Refiner.

Mint

DENVER

M. &amp; R.

Sept., 1908

Arnold, R.G.	10			Sick
"			30	Leave
Bartlett H.D.	3	4		Sick
Campbell A.R.	2			Leave
Bush, WM	2			"
Chaffee, D	2			"
Dakin, C.W.	1	1		"
Dardis, W.N.		1		"
Gray, G.B.	2			"
Howard. M.	2			"
Lindhard, J.A.	2			"
Morrison, R.C.	2			"
Ryan, P	2	3		"
Schell, E.P.	2			Without pay
"		1		Leave
Shields, B.G.	2			"
Smith, E.S.		4		"
Spencer, G.N.		3	30	"
St. John, F		4	30	"
Stoddard, X.T.		1		"
Whitaker, S.R.		1		"
Wirth, E.P.		1		"

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

October 7, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

Since the resignation of Mr. Whitehead, my former assistant, in July, 1906, Foreman B. P. Wirth has had entire charge of the workings of our electrolyte refinery; and his success in perfecting old methods and inventing new ones has been splendid. His constant carefulness in preventing losses in handling the precious metals is evidenced by the fact that each year we have had a surplus of both gold and silver from refinery operations. He handles his men so skilfully that every employee in the refinery seems to take a personal interest in its success, there being no dissension of any kind--just faithful, loyal work. He seems to be a genius in electro-chemical methods for the parting of metals, and the beneficial results he has obtained, due wholly to his intelligent and persistent experimentation and research, certainly entitle him to a higher designation than that of foreman.

It is a pleasure for me to place on record my appreciation of his splendid services to the Denver Mint, with the firm conviction that his constant efforts and successes for the betterment of the service should be recognized and rewarded. I therefore most earnestly recommend that he be promoted to the title of "Superintendent of the Refinery," and that his compensation be increased to seven

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Denver - 2

dollars per day.

Trusting that your personal knowledge of the worthiness of Mr. Wirth will enable you to reach a favorable conclusion on these recommendations, I remain,

Respectfully yours,

*J. W. Wilson*

Melter and Refiner.

Sept/08

## REFINERY

1. Product:	a. Gold	173,857.04	Fine ounces
	b. Silver	147,302.80	" "
	Total	321,159.84	" "

2. Costs:	Totals	Cost per oz.
a. Labor	\$1820.17	.00566748
b. Crucibles	78.00	.00024286
c. Acids	557.41	.00173561
d. Supplies	208.49	.00064917
e. Mitts, gloves & aprons	77.00	.00023975
f. Chemicals	10.00	.00003113
g. Sweeps cellar	0.00	.00000000
h. M. & R. Gen'l	208.33	.00064868
i. Fuel	219.20	.00068252
j. Power	532.95	.00165945
k. Repairs	194.43	.00060539
l. Light & ventilation	80.00	.00024909
m. Incidentals	3.45	.00001074
n. Assays	330.55	.00102923
o. Sick leave, vacation, & holidays	178.65	.00055626
Totals	\$4498.63	.01400744

## 3. New Equipment

71.21

Total expense \$4569.84

4. Average cost per fine oz. for fiscal year	.01785351
5. Crude bullion refined, approx., 428,766.10	.01049203
6. Average cost per gross oz. for fiscal year	.01321723

## SWEEPS CELLAR

1. Product: No work completed, as men were used in other departments most of the month.

## 2. Costs:

a. Labor	\$92.85
b. Power	15.00
c. Light & ventilation	10.27
d. Supplies	10.10
e. Repairs	47.13
f. Incidentals	0.00
g. Sick leave, etc.	7.25

Total \$182.60

h. New equipment 20.40

Total expense \$203.00

All charged to Ingot Melting room.

Sept/08

## INGOT MELTING ROOM

1. Amount of bullion melted:	a. Gold	200,271.75	
	b. Silver	182,768.65	383,040.40
2. Amount good ingots:	a. Eagles		194,890.55
	b. Quar.Dols.	115,310.85	
	c. Dimes	63,580.00	178,890.85
	Total		373,781.40

## 3. Costs:

a. Labor	\$372.64	.00191204	286.90	.00160377	659.54	.00176450
b. M.&R. Gen.	117.71	.00060398	90.63	.00050662	208.34	.00055738
c. Mitts, gloves	7.25	.00003720	6.75	.00003773	14.00	.00003745
d. Crucibles	25.68	.00013176	12.00	.00006708	37.68	.00010080
e. Swp. Cellar	114.70	.00058853	88.30	.00049359	203.00	.00054309
f. Supplies	29.48	.00015126	26.38	.00014746	55.86	.00014944
g. Fuel	68.40	.00035096	50.80	.00028397	119.20	.00031890
h. Power	24.32	.00012478	18.72	.00010464	43.04	.00011514
i. Light & Ven.	14.12	.00007245	10.88	.00006081	25.00	.00006688
j. Repairs	43.51	.00022325	33.50	.00018726	77.01	.00020602
k. Incidentals	.40	.00000205	.30	.00000167	.70	.00000187
l. Sick leave &c	90.68	.00046528	69.82	.00039029	160.50	.00042939
Totals	\$908.89	.00466359	\$694.98	.00388493	\$1603.87	.00429093
m. Alloy Cop.	113.97	.00058478	59.92	.00033495	173.89	.00046521
Totals incl. alloy copper	\$1022.86	.00524838	\$754.90	.00421989	\$1777.76	.00475614

66.18

## 4. New equipment

Total expense \$1843.94

5. Percentage of good ingots to amt. bullion melted:	a. Gold	97.3
	b. Silver	97.8

## 6. Average cost per ounce of ingots for three months:

	Gold	Silver	Total
a. Excluding alloy copper	.00364118	.00418287	.00385516
b. Including "	.00436926	.00461406	.00437489

## 7. Cost distributed as follows:

a. Eagles	\$1022.86
b. Quar. Dollars	486.16
c. Dimes	268.74
Total	\$1777.76

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

October 23, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

I have the honor of most earnestly recommending the following increases in compensation of the employees in the Sweeps cellar and Ingot melting room:

I recommend that the compensation of Elmer S. Smith, Foreman of the Sweeps cellar, be increased from \$4.00 to \$5.00 per day, and that of Harry R. Whitehead, helper, be increased from \$3.25 to \$4.00 per day. Both of these men are expert amalgamator and mill men, and outside of government employment I am satisfied can easily command as much or greater wages than here recommended.

In the Ingot room, I recommend that the wages of helpers, Michael Howard, Burt G. Shields, and Arthur R. Campbell be respectively increased from \$3.25 to \$3.50 per day. And, as Denver Chaffee, melter, has now been employed for two and one-half years, at his present work, and particularly as he is the only melter in the Ingot room receiving less than \$4.50 per day, and further on account of his very careful and satisfactory work, I most earnestly recommend that his compensation be increased so as to conform to that of his associate melters, to wit: from \$4.00 to \$4.50 per day.

In view of the fact that our ingot room work has reached such a satisfactory degree of perfectness, due almost wholly to the

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

intelligence and loyalty of its employees, i feel confident you will approve the modest increases hereinabove requested.

By the way, we have not had a condemned melt, or even a re-melt, so far this year.

Respectfully,

*Jos. Williams*

Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

October 23, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

I have the honor of calling your attention to the services of Xerxes T. Stoddard, melter and acting foreman of the Refinery melting room (we have no person officially bearing the title of Foreman, because it has been thought better practice to keep the melting room under the direct authority of the Foreman of the Refinery).

Mr. Stoddard succeeded to the position formerly held by Jacob R. Boyle, who was transferred to the Philadelphia mint on August 9, 1907; and Mr. Boyle's compensation was \$5.00 per day. Mr. Stoddard has been a model employee, careful, competent in every way and unusually proficient in looking after his work and keeping a careful detail-record of the melting room operations, so that we may have exact data for our cost reports, etc., this being in part additional to the work performed by Mr. Boyle.

I therefore most earnestly recommend that his compensation be increased from \$4.50 to \$5.00 per day, as he certainly deserves it; and having proven by fourteen months' service that he is a worthy successor to Mr. Boyle, it only seems fair that he should have the same compensation for doing the same or greater work.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

And I also respectfully call your attention to George E. Gray, melter in the Refinery melting room; he is an intelligent, careful and loyal workman, and at present is compensated by a wage of \$4.00 per day; he is the only refinery melter receiving less than \$4.50 per day, and as he does the same work as the others and does it promptly and satisfactorily, I certainly think he should have the same pay. I therefore recommend that his compensation be increased from \$4.00 to \$4.50 per day.

Trusting that your personal knowledge of the facts above set forth will assist you in reaching a favorable conclusion on the recommendations made, I remain,

Respectfully,

*Josephine*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

October 23, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

Touching the communication of the Director, under date of October 20, 1908, relating to crude bullion refined, I have the honor of informing you as to our method of computation: We keep account of the silver anodes used, and their weight in any month is the amount of "Silver crude" reported for that month. As to the "Gold crude," we get that by first ascertaining the average fineness of the gold anodes for the month, and then by taking the fine gold product for the month we can readily approximate the amount of base eliminated, which, added to the "fine" gives us the "gold crude" for that month. As we have never used any Refinery fine gold for alloy purposes, I think our method of arriving at the "gold crude" is approximately correct.

I am satisfied from the Director's letter that our method of computing the "silver crude" is erroneous, and hereafter we will not include in that item any Refinery fine silver used for alloy purposes; however, unless we are otherwise advised, we will pursue our old method of ascertaining the weight of the silver anodes used, but from that weight we will deduct all Refinery silver used for alloy purposes, the balance then being the "silver crude" for the month.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

Trusting that this explanation, as well as our succeeding cost reports, will be quite satisfactory, I remain,

Respectfully,

*John J. Mulvaney*

Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

October 30, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

Referring to the Director's letter of October 27th, addressed to you, on the subject of reporting refinery costs on crude bullion, would say, we understand his position in the matter, and will be governed accordingly in the future. The form as outlined in his letter to Mr. Slaker, October 23d, page 2, covers the ground fully.

On account of the comparatively small amount of doré bullion received in this institution, we are compelled to use a large amount of fine silver, returned from the refinery, for alloy for silver anode melts. In the month of September, the silver so employed amounted to 95,321.20 standard ounces. It is plain that, if we could have doré to take the place of the refinery silver so returned, the cost of refining per crude ounce would be correspondingly reduced. The amount of gold deposits going over .992 fine is very trifling. In the future, we will take account of such deposits and report same.

Very respectfully,

*J. H. Bateman*  
Acting Melter and Refiner.

U. S. MINE SERVICE.  
Form No. 219.  
Ed. Feb. 3-65-500.-8 x 10 1/2.

WEIERS AND REFINERS OF BULLION BALANCES.

Minist of the United States at

DENVER

*Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of October*, 1908.

**GOLD.**

[illegible]

**SILVER.**

STANDARD OUNCES.				STANDARD OUNCES.			
Received				Delivered			
Balance	Oct. 1 19	243	86	Ingot	196	441	05
Contained in Gold Deposits		10	24	Bars, Fine			
Contained in Silver Deposits		80	54	Bars, Standard			
Contained in	Seattle	21	46	Bars, Unparted			
Clippings, blanks, etc.		53	95	Bars			
				Sweeps			
	GOLDENKING,		28				
	\$11.		93				
	Treasury	222	51	Balance	Oct. 31, 1908	19	
	Bars						
		572	77				
		078					
					572	078	77

**CORRECT:**

November 2, 1908

*Superintendent.*

Melter and Refiner.

Mint

Denver

Melter and Refiner's

October, 1908

Arnold. R.G.	15			Sick
Bush, Wm			30	Leave
Campbell, A.R.	1	4	30	"
Dakin, C.W.		1		"
Crory, J.H.	1			"
Hetrich, J.M.	6			"
Morrison, R.C.		3	30	"
O'Brian, W.S.	1			"
Pughe, J.F.		2	30	"
Ryan, P.	3			"
Schell, E.P.		1	30	"
"		1	30	Without pay
Spencer, G.N.	1			Leave
St. John, F.		3		"
Whitaker, S.R.	1			"
Wirth, B.P.	1	2		"
Whitehead, H.R.	7	2		"

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

November 9, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Dear Sir:

Under date of October 30, 1908, my assistant, Mr. Hetrich, communicated with you in answer to the October 27th letter of the Director; and I would now like to supplement Mr. Hetrich's communication with the following observations concerning a discussion of at least one feature of the matters under consideration, that occurred early in 1907.

When the "crude bullion operated upon" item was originally called for, it immediately raised the question as to how the correct amount could be ascertained, and, at the Director's request, my views were set forth in statements attached to the monthly cost reports of this department for January and February, 1907, to which reference is requested.

Briefly, it is impossible to determine anywhere near correctly the amount of "crude" used in the Refinery during any specified time (except between clean-up periods), by any system other than the one now in use, which system had the approval of the Bureau, at least tacitly, when the discussion of eighteen or twenty months ago ended.

To do our refinery work economically, it is necessary to carry from one to two weeks' supply of bullion on hand in the Refinery,

## MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT.

Superintendent - 2

so that anodes, cathodes, etc., can be kept in stock that there may be no delay in the cell work at any time; hence it is evident that the amount of "crude" sent to the Refinery in any calendar month cannot necessarily have any close relation to the amount operated upon during that month. In fact, it would be much nearer the correct amount, if we took for October, for instance, the amount of "crude" sent to the Refinery from Sept. 20 to Oct. 20, which would represent approximately the crude operated upon in the month of October.

To illustrate more fully: In July, 1908, we sent to the Refinery 268,712.25 gross ounces of "crude," and received from the Refinery in that month only 29,693.31 gross ounces of fine metal; and if we had reported that we had operated upon (the amount sent to the Refinery), 268,712.25 ounces of crude, and received back only 29,693.31, it would certainly have had the appearance of being peculiar. In this connection, to show more fully what I believe to be the inaccuracy of considering the amount of "crude" sent to the Refinery in any given month as the amount operated upon, I call your attention to the September report of the Refinery of the San Francisco mint, wherein the Melter and Refiner reports 227,532.30 gross ounces of "crude" and a product of 428,072.666 ounces of fine gold and silver.

In answer to the Director's inquiry as to what I meant by the statement that "we never use any refinery fine gold for alloy purposes," it was this, that we never use any of the fine gold product

MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Superintendent - 3

by the Refinery for alloy purposes. But we do use all of the above .992 deposits for fining up gold anode melts just the same as we use all deposits that are above the necessary fineness of the anode melts; that is to say, we put all deposits through the cells, and we have never put an ounce of gold into ingots direct, as the amount of deposits above .992 that we receive is very small and usually contains platinum.

As to our gold anode melts, we have reached the point where we seldom get them above .900. In the last month, October, we had only four melts that got that high; and in the same month we made a number under .870--in fact as low as .864 in gold and with silver from .044 to .095; and we are now making up our silver anode melts with about .400 gold--in fact, as high as .412-1/2.

Referring to the diagram of the Director and his letter of the 23d ult., of course we shall cheerfully comply with his desires, but, owing to the fact that we receive no dore bullion, it is necessary for us to use large quantities of refinery fine silver to alloy our silver anode melts (in October 71,500.00 ounces) and as we cannot take credit with its treatment against our cost account, it will place us at a great disadvantage with the other mints on the item of "cost per ounce of crude," because them seem to have all the dore bullion they can use.

In preparing our cost report for last month, we shall calculate the amount of "crude" on the new basis from July 1st, so that

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 4

the average cost for the year on this item may not be misleading.

Respectfully,

*Joseph Miller*  
Melter and Refiner.

1. Product:	a. Gold	194,312.017 fine ozs.
	b. Silver	125,885.73 " "
	Total	320,214.777

2. Costs:	Totals	Cost per oz.
a. Labor	1969.84	.006151
b. Crucibles	80.00	.000249
c. Acids	411.85	.001266
d. Supplies	296.43	.000894
e. Mitts, gloves, aprons	103.75	.000324
f. Chemicals	15.00	.000046
g. Sweeps cellar	0.00	.000000
h. M. & R. Gen'l	189.16	.000590
i. Fuel	240.00	.000749
j. Power	683.11	.002133
k. Repairs	235.85	.000756
l. Light & ventilation	110.00	.000343
m. Incidentals	4.20	.000013
n. Assays	245.92	.000767
o. Sick leave, vacation	121.80	.000380
	Totals	\$4696.91 .014667

3. New Equipment 21.93

Total expense \$4718.84

4. Average cost per fine ounce for fiscal year .016797

5. Crude bullion, gross ozs.	166,690.69
Fine bullion (above .992)	1,891.15
Bullion retreated	<u>119,650.21</u>

Total operated on 388,232.05

6. Cost per crude ounce .017611

7. Average cost per crude ounce for fiscal year .018698

#### SWEEPS CELLAR

1. Product:	a. Gold, std. ozs.	90.783
	b. Silver " "	<u>218.28</u>
	c. Tailings, avoir.lbs.	5,965

2. Costs:	
a. Labor	110.50
b. Power	16.03
c. Light & Ven.	6.51
d. Supplies	10.10
e. Repairs	18.44
f. Incidentals	0.00
g. Sick lv, etc.,	<u>23.56</u>

Total \$185.14

4. Tailings, contained Gold, 27.83  
Silver 23.36

3. New Equipment 0.00

Total expense 185.14

5. Percentage of extraction:  
a. Gold 78.5  
b. Silver 70.1

6. Departments charged as follows: All to Ingot Melting room.

Oct/08

## INGOT MELTING ROOM

1. Amount of bullion melted:	a. Gold	187,560.72	
	b. Silver	<u>303,894.85</u>	
	Total	<u>491,455.57</u>	

2. Amount of good ingots:	a. Eagles	163,310.98	
	b. Half Eagles	16,540.06	179,851.04
	c. Dimes		<u>297,701.30</u>
	Total		<u>477,552.34</u>

3. Cost of ingots:	Gold		Silver		Total	
	Total	Per oz.	Total	Per oz.	Total	Per oz.
a. Labor	337.22	.001874	503.55	.001691	840.77	.001760
b. M. & R. Gen'l	75.87	.000421	113.29	.000380	189.16	.000396
c. Mitts, gloves	7.50	.000041	8.00	.000026	15.50	.000032
d. Crucibles	25.68	.000142	42.50	.000142	68.18	.000142
e. Sweeps cellar	74.26	.000412	110.88	.000372	185.14	.000387
f. Supplies	24.14	.000134	44.54	.000149	68.68	.000143
g. Fuel	72.00	.000400	84.40	.000283	156.40	.000327
h. Power	24.09	.000133	35.98	.000120	60.07	.000125
i. Light & ven.	14.04	.000078	20.96	.000070	35.00	.000073
j. Repairs	26.42	.000146	39.45	.000132	65.87	.000137
k. Incidentals	0.00	.000000	0.00	.000000	0.00	.000000
l. Sick lv. etc	11.56	.000064	17.27	.000058	28.83	.000060
m. Alloy copper	108.69	.000604	199.16	.000668	307.85	.000644
Totals	\$301.47	.001456	\$1219.98	.004098	\$2021.45	.004232

59.00

## 4. New Equipment

Total expense. \$2080.45

5. Percentage of good ingots to amt. bullion melted:	Gold	95.8
	Silver	97.9

## 6. Average cost per ounce of ingots for four months:

Gold	silver	Total
.004395	.004300	.004334

u. Cost distributed as follows:	a. Eagles	\$728.61
	b. Half Eagles	72.86
	c. Dimes	<u>1219.98</u>
	Total	\$2021.45

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

November 17, 1908.

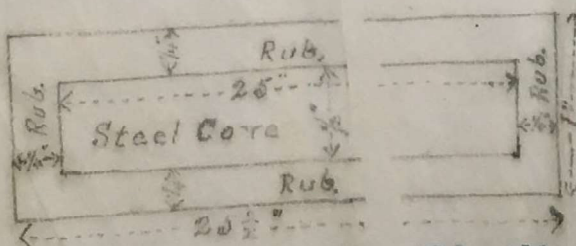
Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

Under date of January 27, 1908, I communicated with you regarding the obtainment from the American Hard Rubber Co. of a sample hard rubber rod and a quotation of price on 300 of the same. We received the said sample rod, and it was precisely what we desired.

Under date of February 4th, the company quoted a price on the rods of \$45.00 per hundred on a lot of 300. We now desire to purchase 300 rods, and request that the same be procured at the earliest possible date.

I have to request also that you procure a quotation of price on 200 rods made in the same manner, but of the dimensions shown in the following diagram of the transverse and longitudinal sections:



The former rod is for the gold cells, and the latter for the silver cells.

Respectfully,

*Joe. C. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER.  
MELTER AND REFINER'S DEPARTMENT.

November 22, 1908.

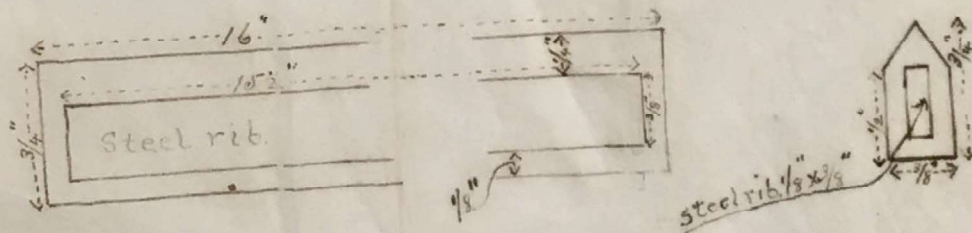
Mr. Frank E. Sawyer,

Superintendent, U. S. Mint,

Denver.

Sir:

Referring to the communication of the American Hard Rubber Co., under date of the 10th inst. (answering yours of the 10th inst.), in which they request a return of the sample hard rubber rod for the gold pill, or an exact drawing of same, I herewith enclose the latter as follows:



and also submit the sample rod for forwarding to said company. The rod is damaged by me, but will still answer to show just what is wanted.

Respectfully,

*John W. Milson*  
Melter and Refiner.

Mint

Denver

Melter and Refiner's

Nov., 1908.

Bush, Wm.		1	30	Leave
Campbell, A.R.	1	1		"
Crory, J.H.	1	1	30	"
Dakin, C.W.		3		"
Gray, G.R.		3		"
Lindbard, J.A.	23			"
Paghe, J.F.	7	1		"
Schell, E.P.		2		Without pay
Spencer, C.N.		2		Leave
St. John, F.		1		"
Stoddard, X.T.	1	2		"
Taggart, R.H.	4			"
Whitehead, H.R.	8	6		"
Winn, H.H.	5			Sick

U. S. MINT SERVICE.  
FORM NO. 319.  
Ed. Feb. 2-08-500-8 x 10 1/2.

MELTERS AND REFINERS OF BULLION BALANCES.

# Print of the United States at

D E N V E R

Gold and Silver Bullion Balances in the Melted and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of November, 1908.

## GOLD.

Received	Balance	STANDARD OUNCES.				Delivered	STANDARD OUNCES.			
		Nov. 1	19							
Contained in Gold Deposits		925	932	763		Ingot	365	254	770	
Contained in Silver Deposits		64	295	043		Bars, Fine				
Contained in		4	173	391		Bars, Standard				
Clippings, blanks, etc.		102	747	228		Bars, Unparted				
		123	334	330		Bars				
		2	120	110		Sweeps				
			61	751						
Con'd coin										
G. Exchg. bars										
		1	222	664	676	Balance Nov. 30, 1908	1	222	664	876

## SILVER.

Received	Balance	STANDARD OUNCES.				Delivered	STANDARD OUNCES.			
		Nov. 1	19							
Contained in Gold Deposits		375	637	72		Ingot	133	597	60	
Contained in Silver Deposits		8	869	95		Bars, Fine				
Contained in		13	232	43		Bars, Standard				
Clippings, blanks, etc.		15	275	74		Bars, Unparted				
		31	634	70		Bars				
		222	663	62		Sweeps				
			15	38						
Fine bars										
G. Exchg. bars										
			667	329	54	Balance Nov. 30, 1908	1	222	664	876

CORRECT:

December 2, 1908.

Superintendent.

*John H. Barker*  
Melter and Refiner.

# REFINERY

1. Product:	a. Gold	194,956.90	fine	ozs.
	b. Silver	127,657.85	"	"
	Total	322,614.75	"	"

## 2. Costs:

a. Labor	\$1902.15
b. Crucibles	124.00
c. Acids	510.46
d. Supplies	258.24
e. Mitts, gloves, aprons	58.50
f. Chemicals	15.00
g. Sweeps cellar	214.60
h. M. & R. Gen'l	208.33
i. Fuel	212.66
j. Power	592.30
k. Repairs	121.14
l. Light, ventilation	100.00
m. Incidentals	5.90
n. Assays	265.52
o. Sick leave, holidays	82.68
Total	\$4671.48

3. New Equipment	136.51
Total expense	\$4807.99

4. Fine bullion, .992 and over, Denver Ref'y (all silver)	106,250.00
" " " " " Deposits	1,682.23
Total fine bullion, .992 and over	107,932.23

5. Slimes, assayer's bars, etc., no charges	50,499.41
---	-----------

Crude bullion at 7¢ per oz.	76.13
8¢	76.06
5-1/2¢	583.91
5¢	8.79
4-1/2¢	69.30
4¢	218,712.90
3-1/2¢	1,705.76
2-1/2¢	155.25
2¢	6,878.83
1-1/2¢	2,089.67
1¢	8,935.75
1/2¢	9,121.33
3/10¢	132.08
	248,545.76

Total amount operated upon 408,977.40

6. Cost per ounce total operated upon	.011478
7. Average " " "	.012532
8. Cost per crude ounce	.018795
9. Average " " "	.018720

Nov/08

## INGOT MELTING ROOM

1. Amount of bullion melted:	a. Gold	322,575.64
	b. Silver	207,032.97
	Total	529,608.61

2. Amount of good ingots:			
	a. Double Eagles	170,733.67	
	b. Eagles	96,580.12	
	c. Half Eagles	48,797.24	316,111.03
	d. Dimes		201,734.00
	Total		517,845.03

## 3. Cost of Ingots:

	Gold		Silver		Total
	Total	Per oz.	Total	Per oz.	
a. Labor	437.39	.001383	343.67	.001703	781.06
b. M. & R. Gen'l	116.67	.000369	91.67	.000454	208.34
c. Mitts, gloves	10.58	.000033	8.50	.000042	19.08
d. Crucibles	33.68	.000106	20.00	.000099	53.68
e. Sweeps Cel.	0.00	.000000	0.00	.000000	0.00
f. Supplies	35.83	.000113	34.39	.000170	70.22
g. Fuel	78.00	.000246	54.40	.000269	132.40
h. Power	27.62	.000087	21.70	.000107	49.32
i. Light, vent'n	14.00	.000044	11.00	.000054	25.00
j. Repairs	24.78	.000078	19.47	.000096	44.25
k. Incidentals	0.34	.000001	0.26	.000001	0.60
l. Sick lv. &c	57.97	.000183	45.55	.000225	103.52
m. Alloy copper	153.92	.000486	136.30	.000675	290.22
Totals	\$990.78	.003134	\$786.91	.003900	\$1777.69
					19.10

## 4. New Equipment

Total expense

\$1796.79

5. Percentage of good ingots to amt. bullion melted:	a. Gold	97.9
	b. Silver	97.4

## 6. Average cost of ingots, per ounce, for five months:

a. Gold	.003957
b. Silver	.004237

7. Cost distributed as follows:	a. Double eagles	535.02
	b. Eagles	307.14
	c. Half Eagles	148.62
	d. Dimes	786.91
	Total	\$1777.69

Nov/08

## SWEEPS CELLAR

1. Product: a. Gold, std. ozs. 184.218  
 b. Silver " " 356.64  
 c. Tailings, avoir. lbs. 14,430

2. Costs:  
 a. Labor \$136.06  
 b. Power 12.19  
 c. Light, vent'n 17.56  
 d. Supplies 6.60  
 e. Repairs 13.75  
 f. Incidentals 0.00  
 g. Sick lv., etc. 28.44

Total \$214.60

0.00

## 3. New Equipment

Total expense

\$214.60

4. Tailings, contained Gold 51.334  
 Silver 417.20

5. Percentage of extraction: a. Gold 78.2  
 b. Silver 46.0

6. Departments charged as follows:

All to Refinery.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

December 16, 1908.

Hon. Frank M. Downer  
Superintendent, U. S. Mint,  
Denver.

Sir:

In response to your request for information as to what constituted the base elements in our gold anodes containing less than 900 parts gold, I requested Mr. Wirth to make an analysis and full report of the anodes made from Gold Anode melts Nos. 120 and 121, which were delivered to the Refinery on December 9th; these melts were regularly made up from our ordinary deposits, and weighed, respectively, 5589.10 and 5304.75 gross ounces, and each contained one Mercur (Utah) bar of from twelve hundred to thirteen hundred gross ounces, which accounts for the large amount of lead contained in them. Mr. Wirth reported as follows:

"The following test was made on gold anode melts Nos. 120 and 121, whose approximate analyses were as follows:

No. 120

Gold	879.5	
Silver	042.1	(Lead 031
		(Copper 014
		(Tellurium trace
Base	078.4	(Arsenic "
		(Tin "
		(Iron "
		(Nickel "
		(Zinc "

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

No. 121

Gold	864.2	(Lead	043
Silver	053.9	(Copper	018
		(Arsenic	trace
Base	081.9-	(Aluminum	"
		(Iron	"
		(Zinc	"
		(Tin	"
		(Tellurium	"

Our usual method of treating these anodes is to divide them in the gold cells with gold from the silver cells which is of a higher fineness, averaging about .920, in the proportions of about two anodes from the silver cells to one base anode. With this combination, we can maintain a current density of 75 amperes per square foot, with an electromotive force of one volt per cell.

This test, however, was made a little differently, as anodes from melts Nos. 120 and 121 were placed in separate cells and continued until they were completed.

The cells were started with electrolyte containing 55 gms. gold per litre and 13% free hydrochloric acid, at a temperature of 68 degrees C., with current density of 60 amp. per square foot, at one volt electromotive force. After running about two hours, the anodes in both cells began throwing off gas, and the current was then reduced to about 50 amp. per square foot, at which it was held until anodes were dissolved. At this current density, the anodes at various times

UNITED STATES AT DENVER,  
MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

December 29, 1908.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver,

Sir:

The Melter and Refiner's department performed the following work for the Coiner's department during the month of December, 1908, to wit: Melted 4,191.91 gross ounces of Coiner's filings; and costs attending the same were as follows:

1 #80 Crucible	\$4.00
1 " Cover	1.20
1 - 2" ring	.70
1 #4 Dipping cup	.50
1 Gold stirrer	1.50
5 lbs. borax, @ 11¢	.55
2 " nitre, @ 7-1/2¢	.15
3 " charcoal, MXX, @ 4-1/2¢	.13
4 hours furnace fuel, @ 37-1/2¢	1.50
4 " time - workman (Morrison)	2.50
Total	\$12.73

Respectfully,

*James M. Morrison*  
Melter and Refiner.

Print of the United States at D E N V E R

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of December, 1908

**GOLD.**

STANDARD OUNCES.		STANDARD OUNCES.	
Received			
Balance			
Contained in Gold Deposits			
Contained in Silver Deposits			
Contained in			
Clippings, blanks, etc.			
Dec. 1 19			
857	409	906	
71	505	395	
4	026	022	
34	554	551	
100	273	190	
Seattle Dep.			
3	796	440	
Con'd coin			
G&S Exchg. bars		21	265
Sweeps bar		15	094
Colmer's bars		128	135
4			
075	829	998	
1			
Delivered			
Ingots			
Bars, Fine			
Bars, Standard			
Bars, Unparted			
Bars			
Sweeps			
Balance			
Dec. 31, 1908			
19			
463	714	930	
	149	422	
611	965	640	
075	829	908	
1			

SILVER

[illegible]

**CORRECTION:**

Superintendent.

January 2  
1908.

Meibner and Wolf 1871

Meibner and Wolf 1871

Mint

Denver

Melter and Refiner's

Dec., 1908

Bush, Wm.		3	30	Leave
Campbell, A.R.	4	4	30	"
Dakin, C.W.	4			Sick
Gray, G.B.		1		Leave
Howard, M.	1	4		"
Lindhard, J.A.	2			"
O'Brian, W.S.	1	3		"
Pughe, J.F.	5	6		"
Ryan, P.J.		3	30	"
Schell, E.P.		4		Without pay
Shields, B.G.	1			Leave
Smith, E.S.	4			"
Spencer, C.N.		3		"
" "		1	30	Without pay
Stoddard, X.T.	1	5	30	Leave
St. John, F.		1	30	"
Whitaker, S.R.	2			"
Whitehead, H.R.	2			"
Wirth, E.P.	2	2		"

# MELTER AND REFINER'S OPERATIONS.

Mint of the United States

At Denver, Colorado, January 12, 1900.

The following statement shows in standard ounces the total amount of bullion in the different forms delivered to the Melters of this Department during the month of December, 1900, and the amount of metal returned in ingots, bars, etc., and recovered with the apparent losses and gains:

METAL OPERATED UPON.	WEIGHT OF METAL		RECOVERY.				APPARENT TOTAL GAIN.
	DELIVERED TO THE MELTERS.	RETURNED BY MELTERS IN INGOTS, BARS.	RETURNED IN TOPS, BARS, CONDEMNED.	LOSS.	FROM SWEETS.	FROM OTHER SOURCES.	
	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.
Gold Ingots,		414,892.46					
Gold Bars,	423,126.97		8,147.95	86.56	103.91		17.35
TOTAL,	423,126.97	414,892.46	8,147.95	86.56	103.91		17.35
Silver Ingots,		193,852.00					
Silver Bars,	198,089.60		4,001.64	235.96	236.05		0.09
TOTAL,	198,089.60	193,852.00	4,001.64	235.96	236.05		0.09

I certify the above to be a correct statement.

Approved:

*James Wilson*  
Melter and Refiner.

Superintendent.

To the DIRECTOR OF THE MINT, Washington.

Amount of bullion melted.

a. Silver 423,126.97

b. Silver 108,089.60

Total 531,216.57

2. Amount of good ingots: a. Double Eagles 414,892.46  
b. Quarter Dollars 193,852.00

Total 608,744.46

Ingot  
Room  
Dec/08

3. Cost of Ingots:	Gold		Silver		Total
	Total	Per oz.	Total	Per oz.	
a. Labor	481.55	.001160	325.06	.001676	806.61
b. M.&R.Gen'l	124.37	.000299	83.96	.000433	208.33
c. Mitts, gloves	5.50	.000013	7.12	.000036	12.62
d. Crucibles	32.84	.000079	24.00	.000123	56.84
e. Sweeps cellar	147.97	.000356	99.89	.000515	247.86
f. Supplies	54.88	.000132	45.24	.000233	100.12
g. Fuel	96.00	.000231	41.25	.000212	137.25
h. Power	29.11	.000070	19.66	.000101	48.77
i. Light, vent'l'n	13.82	.000033	9.34	.000048	23.16
j. Repairs	16.42	.000039	11.09	.000057	27.51
k. Incidentals	1.79	.000004	1.21	.000006	3.00
l. Sick lv. &c	69.50	.000167	46.92	.000242	116.42
m. Alloy copper	313.43	.000755	137.17	.000707	450.60
Totals	1387.18	.003343	851.91	.004394	2239.09

4. New Equipment

0.00

Total expense

\$2239.09

5. Percentage of good ingots: a. Gold 98.05  
b. Silver 97.8

6. Average cost of ingots per ounce for six months: a. Gold .003765  
b. Silver .004258

7. Cost distributed as follows: a. Double Eagles \$1387.18  
b. Quarter dollars 851.91  
Total \$2239.09

#### SWEEPS CELLAR

1. Product: a. Gold std. ozs. 103.91  
b. Silver " 236.05  
c. Tailings, avoir. lbs. 5975

2. Costs: a. Labor \$148.10  
b. Power 15.23  
c. Light, vent'l'n 23.15  
d. Supplies 11.47  
e. Repairs 6.46  
f. Incidentals .45  
g. Sick lv. &c 43.00  
Total 247.86

3. New Equipment 0.00  
Total expense \$247.86

4. Tailings contained: a. Gold 15.80  
b. Silver 42.95

5. Percentage of extraction: a. Gold 86.8  
b. Silver 84.6

6. Departments charged as follows: All to Ingot room

Dec/08

## REFINERY

1. Product	a. Gold	166,841.06 fine ozs.
	b. Silver	<u>13,735.30</u> "
	Total	180,576.36 "

## 2. Costs:

a. Labor	\$1,865.54
b. Crucibles	104.00
c. Acids	407.72
d. Supplies	247.35
e. Mitts, gloves, aprons	72.00
f. Chemicals	20.00
g. Sweeps cellar	0.00
h. M. & R. General	208.34
i. Fuel	187.50
j. Power	652.83
k. Repairs	129.69
l. Light & ventilation	100.00
m. Incidentals	3.45
n. Assays	279.22
o. Sick leave, vacation, etc.	<u>217.98</u>
Total	4,495.62

## 3. New Equipment

156.06

Total expense \$4,651.68

4. Fine bullion, .992 and over, Denver Ref'y, all silver,	100,950.00
" " " " " Deposits	<u>887.84</u>

101,837.84

5. Slimes, Assayer's and Coiner's bars, &c, no charges	70,234.21
--	-----------

6. Crude bullion at 6¢ per ounce	11.75
5-1/2	395.10
5	300.15
4-1/2	4,587.91
4	141,856.80
3	222.15
2-1/2	519.94
2	5,366.65
1	9,009.98
1/2	1,822.03
4/10	<u>624.33</u>

Total crude bullion 164,716.79

Total amount operated upon 336,788.84

7. Cost per ounce total operated upon,	.013348
8. Average " " " "	.012669
9. Cost per crude ounce	.027293
10. Average " " "	.019822

# MELTER AND REFINER'S OPERATIONS.

M I N T of the United States

At Denver, Colorado, January 23, 1909

The following statement shows in standard ounces the total amount of bullion in the different forms delivered to the Melters of this Department during the months from July 1st to Dec. 1st, 1908, and the amount of metal returned in ingots, bars, etc., and recovered with the apparent losses and gains:

METAL OPERATED UPON.	WEIGHT OF METAL.		RETURNED IN TOPS, BARS, CONDEMNED.		RECOVERY.		APPARENT NET LOSS.	APPARENT TOTAL GAIN.
	DELIVERED TO THE MELTERS.	RETURNED BY MELTERS IN INGOTS, BARS.	RETURNED IN TOPS, BARS, CONDEMNED.	APPARENT GAIN.	FROM SWEEPS.	FROM OTHER SOURCES.		
	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.
<i>For</i> Gold Ingots,	938,112.89	910,427.90	27,392.80	292.19	101.24		130.95	
Old Bars,								
TOTAL,	938,112.89	910,427.90	27,392.80	292.19	161.24		130.95	
<i>For</i> Silver Ingots,	1,309,023.55	1,280,844.80	27,127.94	1050.61	326.07		724.74	
Silver Bars,								
TOTAL,	1,309,023.55	1,280,844.80	27,127.94	1050.61	326.07		724.94	

I certify the above to be a correct statement.

Approved:

Superintendent.

To the DIRECTOR OF THE MINT, Washington.

Melter and Refiner.

# MELTER AND REFINER'S OPERATIONS.

M I N T of the United States

At Denver, Colorado, January 23, 1908

The following statement shows in standard ounces the total amount of bullion in the different forms delivered to the Melters of this Department during the month of December 1908, and the amount of metal returned in ingots, bars, etc., and recovered with the apparent losses and gains:

METAL OPERATED UPON.	WEIGHT OF METAL.			RECOVERY.				
	DELIVERED TO THE MELTERS.	RETURNED BY MELTERS IN INGOTS, BARS.	RETURNED IN TOPS, BARS, CONDENSED.	APPARENT GAIN.	APPARENT LOSS.	FROM SWEETS.	FROM OTHER SOURCES.	APPARENT NET LOSS.
	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.
Gold Ingots,	423,126.97	414,892.46	8,147.95	8,147.95	103.91	103.91		17.35
Gold Bars,								
TOTAL,	423,126.97	414,892.46	8,147.95	8,147.95	103.91	103.91		17.35
Silver Ingots,	198,089.60	193,852.00	4,001.64	4,001.64	236.05	236.05		0.09
Silver Bars,								
TOTAL,	198,089.60	193,852.00	4,001.64	4,001.64	236.05	236.05		0.09

I certify the above to be a correct statement.

Approved:

Melter and Refiner.

Superintendent.

TO THE DIRECTOR OF THE MINT, Washington.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT

January 26, 1909.

Hon. Frank M. Downer,  
Superintendent, U.S.Mint,  
Denver.

Sir:

Complying with your request of this morning, I have to advise you that this department is using the following blank books and forms:

Form No. 469	Foreman's Record of Gold Melting
" 275	" " " Silver "
" 871	Record of Refinery Melts
" 184	M. & R.'s Record of Silver Ingot Melting
" 185	" " " Gold " "
" 963	" Register of Deposits
" 338	Gold Deposits Sent to the Refinery
" 413B	M. & R.'s Vault register of Silver bars & grains
" 168	Receipts and Deliveries of Gold Bullion
" 183	" " " Silver "
" 740	M. & R. Bullion Ledger
" 869	Refinery Account
" 20	Receipts for Gold Deposits, M. & R. to Supt.
" 21	" " " Clippings "
" 28	" " " Silver " "
" 492E	M. & R. Requisition for Supplies
" 722	Daily Statement of Operations
" 219	M. & R.'s Statement of Balances and Receipts

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

- Form No. 65 M. & R.'s Operations
  - " 713 " Settlement
  - " 929 Melts for Parting
  - 12 " 900 Settlement of M. & R.'s Department
- Letterheads and noteheads, ruled and unruled

In addition to the foregoing, the Melter and Refiner's Department is using the following books and forms which are made in the office from time to time as needed:

- |            |  |
|------------|--|
| Stock form | Assayer in account with Melter and Refiner   |
| "          | Record of Ingots delivered to Superintendent |
| Memo. slip | Gold Ingot Melt delivered to Melter          |
| "          | Silver " " " " "                             |

Very Respectfully,

*Joseph Milam*  
Melter and Refiner.

U. S. MINT SERVICE  
Form No. 219.  
Ed. Feb. 3-05-500.-8 x 10 1/2

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at DENVER

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of January, 1909.

GOLD.

Received	STANDARD OUNCES.				Delivered	STANDARD OUNCES.			
	Balance								
Contained in Gold Deposits		611	965	646	Ingots		169	298	430
Contained in Silver Deposits		73	817	029	Bars, Fine				
Contained in		5	139	322	Bars, Standard				
Clippings, blanks, etc.		79	52	596	Bars, Unparted				
		3	224	880	Bars				
			345	780	Sweeps				
Jan. 1	19				Balance	January 30	19		
		773	545	253		604	246	823	
						773	545	253	

SILVER.

Received	STANDARD OUNCES.				Delivered	STANDARD OUNCES.			
	Balance								
Contained in Gold Deposits		735	608	68	Ingots		508	663	60
Contained in Silver Deposits		9	848	23	Bars, Fine				
Contained in		16	921	02	Bars, Standard				
Clippings, blanks, etc.		104	15	62	Bars, Unparted				
		3	810	80	Bars				
		279	603	95	Sweeps				
			040	50					
Jan. 1	19				Balance	January 30	19		
		149	849	50		641	185	90	
						1	149	849	50

CORRECT:

February 1, 1909.

Superintendent.

Melter and Refiner.

*Boehm*

## M I N T

Denver, Colorado

Melter and Refiner's

Jan. 1909

Arnold, R.G.	10		Sick
Howard, M.	1		Leave
Schell, E.P.		1	"
Shields, B.G.	6		"
Spencer, G.N.	1		"
Taggart, B.H.		30	"
Whitaker, S.R.		3	"
Wirth, B.P.		7	"

U. S. MINT SERVICE.  
Form No. 65.  
Ed. Oct. 22-08-500.-8 x 10 1/2.

# MELTER AND REFINER'S OPERATIONS.

At Denver, Colo., January 1<sup>st</sup>, 1909.  
of the United States

The following statement shows in standard ounces the total amount of bullion in the different forms delivered to the Melters of this Department during the month of January, 1909, and the amount of metal returned in ingots, bars, etc., and recovered with the apparent losses and gains:

METAL OPERATED UPON.	WEIGHT OF METAL.			RECOVERY.			
	DELIVERED TO THE MELTERS.	RETURNED BY MELTERS IN INGOTS, BARS.	RETURNED IN TOPS, BARS, CONDENSED.	APPARENT GAIN.	APPARENT LOSS.	FROM SWEEPERS.	FROM OTHER SOURCES.
For Gold Ingots,	Stand. ozs. 198.806.48	Stand. ozs. 193.433.59	Stand. ozs. 5.321.06	Stand. ozs. 51.83	Stand. ozs. 51.83	Stand. ozs. 51.83	Stand. ozs. 51.83
Gold Bars,							
TOTAL,							
For Silver Ingots,	Stand. ozs. 419.649.35	Stand. ozs. 411.627.50	Stand. ozs. 7.707.24	Stand. ozs. 314.61	Stand. ozs. 314.61	Stand. ozs. 314.61	Stand. ozs. 314.61
Silver Bars,							
TOTAL,							

I certify the above to be a correct statement.

Approved:

Superintendent.

Melter and Refiner.

To the DIRECTOR OF THE MINT, Washington.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

February 5, 1909.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

I have carefully considered the form of blank which in contemplation as a substitute for Form No. 219, and respectfully present the following suggestions:

Sweeps: As to sweeps bars. Upon their being received from the Sweeps cellar, we credit the department furnishing the sweeps from which they were obtained, and then treat them as ordinary deposits in the make-up of Refinery anode melts; so the two lines of "Sweeps" in first and last "balances" might be omitted, and if any sweeps bars should be on hand at the end of the month, they could be shown on the line "bars" by writing in the word "sweeps."

As to the "Sweeps tailings," they are sacked and stored in the Sweeps cellar until we have a sufficient amount to sell, at which time the Assayer reports in duplicate to the Superintendent and the Melter and Refiner, and upon the report the Superintendent receipts to the Melter and Refiner for the standard ounces contained therein, and the Melter and Refiner credits the department entitled thereto, and the whole matter is concluded in the one transaction which occurs three or four times each year. So the new form should contain two lines under the sub-head "Deliv-

## MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

ered to Superintendent," on which to exhibit the account of said tailings so delivered. Also, under said sub-head, in the item "Ingots made," the word "made" should be stricken out, as its presence is unnecessary and may be misleading as to what ingots are referred to; that is, does the item refer to ingots made during the month of the report, and delivered, or to ingots of any month delivered?

I think the new blank is a great improvement, and the above suggestion to cut out the two lines of "Sweeps" in each of the "Balance" accounts was made partly from a desire to shorten the length of the form, as our present letter-press copy-book is only 12 inches long, and our press only 15; so that if the blank exceeds the latter length, it will be necessary for us to procure a new press.

I would further suggest that, if it is the intention to leave enough blank lines under the item "Ingots" (which occurs four times) to enter the designation of all denominations of coins that can be made, then it would be well to print in the designations.

I have noted the changes suggested on the form which I return herewith.

Respectfully submitted,

*Greenmilson*  
Melter and Refiner.

1. Amount of bullion melted: a. Gold 198,906.48  
b. Silver 419,849.55  
Total 618,455.83

2. Amount of good ingots: a. Half Eagles 192,433.59  
b. Quarter Dollars 411,827.80  
Total 606,061.09

3. Cost of Ingots:	Gold		Silver		Total
	Total	Per oz.	Total	Per oz.	
a. Labor	\$256.15	.001324	\$597.89	.001452	\$853.84
b. M. & R. Gen'l	62.50	.000323	145.83	.000354	208.55
c. Mitts, gloves	3.25	.000016	10.00	.000024	13.25
d. Crucibles	16.84	.000087	32.00	.000077	48.84
e. Sweeps cellar	0.00	.000000	0.00	.000000	0.00
f. Supplies	24.44	.000126	69.50	.000169	93.94
g. Fuel	41.62	.000215	94.50	.000229	136.12
h. Power	15.86	.000081	37.02	.000089	52.88
i. Light, ventil'n	7.08	.000036	16.51	.000040	23.59
j. Repairs	14.64	.000075	34.16	.000082	48.80
k. Incidentals	0.00	.000000	0.00	.000000	0.00
l. Sick leave, &c.	19.97	.000103	46.59	.000113	66.56
m. Alloy copper	114.31	.000590	309.75	.000752	424.06
Totals	\$576.36	.002981	\$1393.55	.003385	\$1970.21

4. New Equipment

72.76

Total expense

\$2042.97

5. Percentage of good ingots: a. Gold 97.2  
b. Silver 98.0

6. Average cost of ingots per ounce for 7 months:

a. Gold .003665  
b. Silver .004067

7. Cost distributed as follows: a. Half Eagles \$576.36  
b. Quarter Dollars 1393.55  
Total \$1970.21

#### SWEEPS CELLAR

1. Product: a. Gold std. ozs. 186.968  
b. Silver " 732.42  
c. Tailings, avoird. lbs. 7,742

2. Costs: a. Labor \$175.50  
b. Power 19.05  
c. Light, vent'n 23.58  
d. Supplies 8.07  
e. Repairs 4.75  
f. Incidentals .60  
g. Sick lv &c 9.50  
Total \$241.05

3. New Equipment

Total expense

57.25

\$298.30

4. Tailings contained: a. Gold, 26.968; Silver, 164.43

5. Percentage of extraction: a. Gold, 87.39; b. Silver, 82.25

6. Departments charged as follows: All to Refinery.

## REFINERY

1. Product: a. Gold	148,743.76	fine	ozs.
b. Silver	21,689.70	"	"
Total	170,433.46	"	"

## 2. Costs:

a. Labor	\$1954.16
b. Crucibles	116.00
c. Acids	476.54
d. Supplies	209.18
e. Mitts, gloves, aprons	79.00
f. Chemicals	15.00
g. Sweeps cellar	241.05
h. M. & R. General	208.33
i. Fuel	189.37
j. Power	585.00
k. Repairs	142.55
l. Light & ventilation	100.00
m. Incidentals	3.30
n. Assays	280.27
o. Sick leave, vacation & holidays	125.87
Total	\$4725.60

## 3. New Equipment

	45.72
Total expense	\$4771.32

4. Fine bullion, .992 and over, Denver ref'y, all silver,	134,305.50
" " " " Deposits	91.86

Total fine bullion 134,397.36

5. Slimes, assayers & <del>assayers</del> sweeps bars, no charges	41,089.69
---	-----------

6. Crude bullion at 6-1/2¢ per ounce	244.08
6	143.67
5-1/2	195.62
5	250.70
4-1/2	57.88
4	190552.73
3-1/2	1239.19
3	617.93
2-1/2	177.71
2	7340.65
1-1/2	3668.67
1	8096.13
1/2	639.52

Total crude bullion 217,124.42

Total amount operated upon 392,611.53

7. Cost per ounce total operated upon,	.012036
8. Average " " " "	.012565
9. Cost per crude ounce	.021764
10. Average " " " "	.020104

MELTERS AND REFINERS OF BULLION BALANCES

Minut of the United States at D E N V E R

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of February, 1909.

**GOLD.**

[illegible]

**SILVER**

[illegible]

Superintendent.

March 1 1909.

Melter and Refiner.

U. S. MINE SERVICE,  
Form No. 65.  
Ed. Oct. 22-28-30M-82107

H

## MELTER AND REFINER'S OPERATIONS.

At Denver Colorado, month of the United States, March 1<sup>st</sup>, 1909.

The following statement shows in standard ounces the total amount of bullion in the different forms delivered to the Melters of this Department during the month of February, 1909, and the amount of metal returned in ingots, bars, etc., and recovered with the apparent losses and gains:

METAL OPERATED UPON.	WEIGHT OF METAL.			RECOVERY.		
	DELIVERED TO THE MELTERS.	RETURNED BY MELTERS IN INGOTS, BARS.	RETURNED IN LOBS, BARS, CONDENSED.	APPARENT GAIN.	APPARENT LOSS.	APPARENT TOTAL GAIN.
Gold Ingots,	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.
Gold Bars,	371.904.85	362.720.39	9.18.22		71.84.123.132	160.361
TOTAL,					71.84.123.132	212.253
Silver Ingots,	172.257.40	169.257.45	2.892.10		107.85.720.98	408.72
Silver Bars,						
TOTAL,						1021.85

I certify the above to be a correct statement.

Approved:

*William*  
Melter and Refiner.

Superintendent.

To the DIRECTOR OF THE MINT, Washington.

Mint

Denver

M. &amp; R.

February, 1909

Campbell, A.R.	2		Leave
Gray, G.B.		30	"
O'Brian, W.S.	1		Without pay
Schell, E.P.	1		Leave
Smith, E.S.		1	"
Spencer, G.N.		4	"
St. John, F.		4	30
Stoddard, X.T.		2	<del>30</del> "
Wirth, E.P.	1	5	30
Bush, Wm		1	"
Whitehead, HR		1	"
Hettrich JM		3	30

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

March 3, 1909.

The Waterbury Farrel F. & M. Co.,  
Waterbury, Conn.

Gentlemen:

You furnished our Mint with a 200-Ton hydraulic press,  
and I would now like to have you furnish me cost on duplicate  
parts for said press, particularly at this time, with the cost  
of a new cylindrical mould, which is made in three pieces, 22"  
deep, and 15" diameter.

Respectfully,

*J. A. Milson*  
Melter and Refiner.

U. S. MINT SERVICE  
 NORTH NO. 65  
 PL. Oct. 22-06-800-82102

# MELTER AND REFINER'S OPERATIONS.

At Denver, Colorado, of the United States, March 5<sup>th</sup>, 1909.

The following statement shows in standard ounces the total amount of bullion in the different forms delivered to the Melters of this Department during the month of February, 1909, and the amount of metal returned in ingots, bars, etc., and recovered with the apparent losses and gains:

METAL OPERATED UPON.	WEIGHT OF METAL.			RECOVERY.				
	DELIVERED TO THIS MELTERS.	RETURNED BY MELTERS IN INGOTS, BARS, ETC.	RETURNED IN TONGS, BARS, CONDENSED.	APPARENT GAIN.	APPARENT LOSS.	FROM SWEEPINGS METAL	FROM OTHER SOURCES.	APPARENT NET LOSS.
	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.
Gold Ingots,	376,904.850	362,720.390	9,113.22		71,244.123	123.132	160.361	212.253.
Gold Bars,	113.789	113.789						
TOTAL,	372,018.639	362,834.179	9,113.22		71,244.123	123.132	160.361	212.253
Silver Ingots,	112.237.440	169,257.445	2,892.10		107,857,200	98.408	72	1021.85
Silver Bars,								
TOTAL,	172,257.440	169,257.445	2,892.10		107,857,200	98.408	72	1021.85

I certify the above to be a correct statement.

Approved:

Superintendent.

To the DIRECTOR OF THE MINT, Washington.

Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

March 9, 1909.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

Requisition is hereby made for the following blank books and form for the use of the Melter and Refiner's department during the present calendar year. None of these will be required before July 1, 1909.

2	Form No. 871, Record of Refinery Melts
1	" " 183, Receipts & Deliveries of Silver Bullion
12	" " 900, Settlement of M. & R.'s Department

Respectfully,

*James M. Smith*  
Melter and Refiner.

## REFINERY

1. Product: a. Gold	145,596.09	fine	ozs.
b. Silver	29,464.80	"	"
Total	<u>175,060.89</u>	"	"

## 2. Costs:

a. Labor	\$1755.00
b. Crucibles	96.00
c. Acids	364.55
d. Supplies	186.48
e. Mitts, gloves, aprons	66.75
f. Chemicals	10.00
g. Sweeps cellar	272.79
h. M. & R. Gen'l	208.33
i. Fuel	137.40
j. Power	586.22
k. Repairs	127.83
l. Light & ventilation	100.00
m. Incidentals	3.50,
n. Assays	344.35
o. Sick leave, vacation & holidays	<u>122.23</u>

Total \$4381.43

3. New Equipment 137.11

Total expense \$4518.54

4. Fine bullion, .992 & over, Denver Ref'y, all silver	112,200.00
" " " " " Deposits	<u>1,096.53</u>

Total fine bullion 113,296.53

5. Slimes, Assayer's & Sweeps bars, etc., no charges 39,643.85

6. Crude bullion at 6¢ per oz.	4.54
5-1/2	76.85
5	5019.74
4-1/2	52.69
4	156540.80
3-1/2	23.31
2-1/2	68.82
2	5765.76
1-1/2	1.46
1	8129.73
1/2	<u>704.72</u>

Total Crude bullion 176,408.42

Total amount operated upon 329,348.80

7. Cost per oz. total operated upon .013303

8. Average " " " " .012654

9. Cost per crude ounce .024836

10. Average " " " " .020602

## INGOT MELTING ROOM

1. Amt. of bullion melted:	a. Gold	371,904.85
	b. Silver	172,257.40
	Total	544,162.25
2. Amt. of good ingots:	a. Half Eagles	362,720.39
	b. Qr.Dollars	169,257.45
	Total	531,977.84

3. Cost of Ingots:	Gold		Silver		Total
	Total	Per oz.	Total	Per oz.	
a. Labor	513.39	.001415	256.69	.001516	770.08
b. M.& R.Gen.	138.89	.000382	69.45	.000410	208.34
c. Mitts, gloves	5.00	.000013	7.50	.000044	12.50
d. Crucibles	24.84	.000068	16.00	.000094	40.84
e. Sweeps cellar	0.00	.000000	0.00	.000000	0.00
f. Supplies	37.95	.000104	35.25	.000208	73.20
g. Fuel	66.90	.000184	29.10	.000171	96.00
h. Power	33.79	.000093	16.90	.000099	50.69
i. Light, ventil'n	13.77	.000037	6.88	.000040	20.65
j. Repairs	42.86	.000118	21.43	.000126	64.29
k. Incidentals	1.60	.000004	.80	.000004	2.40
l. Sick lv. &c.	59.33	.000163	29.67	.000175	89.00
m. Alloy copper	289.10	.000797	111.36	.000657	400.46
Totals	\$1227.42	.003383	\$601.03	.003550	\$1828.45
4. Neq Equipment					14.60
			Total expense		\$1843.05

5. Percentage of good ingots: a. Gold 97.5 b. Silver 98.2

6. Average cost of ingots per oz. for 8 months: a. Gold .003611  
b. Silver .004025

7. Cost distributed as follows: a. Half eagles \$1227.42  
b. Quar.Dollars 601.03  
Total \$1828.45

## SWEEPS CELLAR

1. Product:	a. Gold, std. ozs.	98.483
	b. Silver "	277.49
	c. Tailings, avoird. lbs.	7,873
2. Costs:	a. Labor	138.19
	b. Power	25.25
	c. Light, vent'l'n	20.65
	d. Supplies	11.31
	e. Repairs	9.33
	f. Incidentals	0.00
	g. Sick lv. &c.	18.06
	Total	\$272.79
3. New Equipment		19.80
	Total expense	\$292.59
4. Tailings contained:	a. Gold	26.505 std. ozs.
	b. Silver	200.32 "
5. Percentage of extraction:	a. Gold	78.79
	b. Silver	58.07
6. Departments charged as follows:	All to Refinery.	

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

March 23, 1909.

Hon. Frank M. Downery,

Superintendent U. S. Mint,

Denver.

Sir:

I am sending you herewith a box prepared for shipment which contains the cores of propellers for the gold and silver cells, with the request that you obtain quotations of price for furnishing same, from the American Hard Rubber Co., No. 9 Mercer St., New York. We shall want 36 of the gold cell propellers, being the smaller ones; and 24 of the silver cell propellers, being the larger ones.

We desire to have these cores made of good iron, practically duplicates of the samples herewith; the same then to be covered complete with not less than 1/16", nor more than 3/32" in thickness of hard rubber.

Very respectfully,

*John Wilson*  
Melter and Refiner.

1. *Gold*: a. *Gold*, std. ozs. 24.43  
b. *Silver* " " 24.43  
c. *Tailings*, avoird. 15.873  
2. *Costs*: a. *Labor* 120.19  
b. *Cover* 15.25  
c. *Light*, vent'l'n 20.00  
d. *Supplies* 11.31  
e. *Repairs* 7.33  
f. *Incidentals* 0.00  
g. *Tick lv. ac.* 16.36  
Total 209.79  
3. *New Equipment* 19.80  
Total Expense 229.59

4. *Tailings* contained: a. *Gold* 24.53 std. ozs.  
b. *Silver* 24.03 " "  
5. *Bag of extraction*: a. *Gold* 24.73  
b. *Silver* 24.07

6. *Department charged as follows*: all to Refinery

MINT OF THE UNITED STATES AT DENVER,  
 MELTER AND REFINER'S DEPARTMENT,  
 MINT OF THE UNITED STATES AT DENVER,  
 MELTER AND REFINER'S DEPARTMENT,  
 April 1, 1909

March 23, 1909.

RECEIVED of Frank M. Downer, Superintendent of the Mint of the United States at Denver, in redelivery after settlement on account of renewal of official bond of the Melter and Refiner of said Mint, Four hundred and thirty-three thousand seven hundred and ninety-three and two hundred thousandths (433,793.200) standard ounces of Gold; and Four hundred and thirteen thousand seven hundred and sixty-seven and seven one hundredths (413,767.71), standard ounces of Silver. you obtain quotations of price for furnishing same, from the American Hard Rubber Co. No. 9 Mercer St., New York. We shall want 36 of the gold cell propellers, being the smaller ones; and 24 of the silver cell propellers, being the larger ones.

We desire to have these cores made of good iron, practically duplicates of the samples herewith; the same then to be covered complete with not less than 1/16", nor more than 3/32" in thickness of hard rubber.

Very respectfully,

Melter and Refiner.

U. S. MINE SERVICE  
Form No. 219,  
Ed. Feb. 3-05-400. 8 x 10 1/2.

MELTERS AND REFINERS OF BULLION BALANCES.

Mint of the United States at DENVER

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of March, 1909.

GOLD.

STANDARD OUNCES.				STANDARD OUNCES.			
Received		Mch. 1 19		Delivered			
Balance		596	118 541	Ingots		362	615 800
Contained in Gold Deposits		67	143 692	Bars, Fine			
Contained in Silver Deposits		4	702 122	Bars, Standard			
Contained in		119	169 921	Bars, Unparted			
Clippings, blanks, etc.		3	522 366	Bars			
			699 100	Sweeps		435	793 200
Con'd coin			26 977	In settlement			
G. Exch. bars			7 152				
S. "			19 135				
SWPS. 3d Gr. D.M.R.		796	409 000	Balance March 31, 1909	19	796	409 000

SILVER.

STANDARD OUNCES.				STANDARD OUNCES.			
Received				Delivered			
Balance	Mon. 1	19	487	Ingots		209	342 80
Contained in Gold Deposits			9	Bars, Fine			
Contained in Silver Deposits			12	Bars, Standard			
Contained in			1	Bars, Unparted			
Clippings, blanks, etc.			95	Bars			
			9	Sweeps		415	767 71
Con'd coin				In settlement			0 00
G. Exch. bars							
S. "							
SWPS. 5d Gr. D.M.R.				Balance March 31, 1909	19	683	110 51
			683				
			110 51				

CORRECT:

Superintendent.

April 1st, 1909

William  
Melter and Refiner.

Mint

Denver

Melter and Refiner's

March, 1909

Chaffee, D.	1	Leave
Dakin, C.W.	2	30 "
Lindhard, J.A.	1	"
Ryan, P.	4	"
Schell, E.P.	1	"
Smith, E.S.	1	"
St. John, F.	5	"
Stoddard, K.T.	1	"
Taggert, B.H.	4	Sick
Whitaker, S.R.	5	Leave
Wirth, B.P.	1	"

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

April 7, 1909.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

A letter under date of March 29th from the Department of Electro-Chemistry of the Indiana State University, referred to this department, has been duly considered. The current density used in our silver process at the present time is fourteen amperes per square foot at the cathode and about the same at the anode. A higher current density than this is hardly permissible on account of its generating gas at the anode. Any electrolyte to be used in our process must be adapted to refining gold at the anode, as well as depositing silver at the cathode, that is, it must be capable of dissolving base metals from the anode. As to the deposit on the cathode, its solidity and adherence are both quite satisfactory under our present process. However, we would be pleased to try the electrolyte referred to in order to ascertain whether or not it could be applied to our process, and, if so, whether or not it would be more economical.

Very respectfully,

*John Wilson*  
Melter and Refiner.

## REFINERY

1. Product:	a. Gold	174,837.59	fine	ozs.
	b. Silver	63,737.80	"	"
	Total	238,575.39	"	"

## 2. Costs:

a. Labor	\$2043.90
b. Crucibles	108.00
c. Acids	580.49
d. Supplies	241.82
e. Mitts, Gloves, A.	82.50
f. Chemicals	15.00
g. Sweeps Cellar	0.00
h. M. & R. Gen'l	208.34
i. Fuel	184.50
j. Power	573.64
k. Repairs	179.76
l. Light, ventl.	100.00
m. Incidentals	12.40
n. Assays	359.61
o. Sick lv. etc.	43.13

Total \$4733.09

## 3. New Equipment

173.42

## Total expense

\$4906.51

4. Fine bullion, .992 & over, Denver Ref'y, all silver,	99,580.00
" " " " " Deposits	267.81

Total fine bullion

99,847.81

## 5. Slimes, assayer's &amp; Sweeps bars, no charges

75,787.29

6. Crude bullion at 7/8 per oz.	13.75
6-1/2	39.24
6	25.34
5-1/2	235.96
5	241.15
4-1/2	3,043.29
4	203,673.83
3-1/2	50.62
3	39.14
2	10,026.37
1-1/2	1,943.34
1	15,702.55
1/2	981.35

Total crude bullion

236,015.93

Total amount operated upon

411,651.03

7. Cost per ounce total operated upon	.011497
8. Average cost per ounce ditto	.012503
9. Cost per crude ounce	.020054
10. Average ditto	.020535

Ingot Room

1. Amount of bullion melted:	a. Gold	322,013.08
	b. Silver	343,389.55
	Total	665,402.63

2. Amount of good ingots:	a. Half Eagles	314,173.65
	b. Qr. Dollars	338,431.00
	Total	652,604.65

	Gold		Silver		Total
	Total	Per oz.	Total	Per oz.	
a. Labor	\$450.39	.001433	\$485.91	.001435	\$936.36
b. M. & R. Gen'l	100.21	.000318	108.12	.000319	208.33
c. Mitts & gloves	10.50	.000033	6.75	.000019	17.25
d. Crucibles	25.68	.000081	28.00	.000082	53.68
e. Swps. Cellar	146.23	.000466	157.73	.000466	304.01
f. Supplies	38.20	.000121	40.03	.000118	78.26
g. Fuel	56.40	.000179	60.40	.000179	117.30
h. Power	33.54	.000106	36.18	.000106	69.72
i. Light, ventil'n	15.05	.000047	16.33	.000047	31.28
j. Repairs	17.97	.000057	19.39	.000057	37.36
k. Incidentals	3.15	.000010	3.40	.000010	6.55
l. Sick lv. &c	2.84	.000009	3.07	.000009	5.91
m. Alloy copper	166.67	.000530	200.60	.000592	367.27
Totals	\$1066.83	.003395	\$1166.45	.003446	\$2233.28

4. New Equipment

66.08

Total expense

\$2299.36

5. Percentage of good ingots:	a.	gold	97.5
	b.	silver	98.5

6. Average cost of ingots per ounce for 9 months:	Gold	.003580
	Silver	.003943

7. Cost distributed as follows:	a. Half Eagles	\$1066.83
	b. Quarter dollars	1166.45

Total \$2233.28

## SWEEPS CELLAR

1. Product:	a. Gold, std. ozs.	118.99,
	b. Silver "	202.24
	c. Tailings, avoir. lbs.	14,390

2. Costs:	a. Labor	\$214.07
	b. Power	23.30
	c. Light & Ven.	31.28
	d. Supplies	12.10
	e. Repairs	18.26
	f. Incidentals	0.00
	g. Sick lv. &c.	4.50

Total 304.01

0.00

3. New Equipment

Total expense \$304.01

4. Tailings contained:	a. Gold,	32.27;	b. Silver,	151.61
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5. Percentage of extraction:	a. Gold,	78.6;	b. Silver,	57.1
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6. Department charged: All to 7-4-4

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT.

April 12, 1909.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
City.

Sir:

Under date of March 23, I requested that you obtain quotation of price for furnishing propellers for the gold and silver cells, and closed that communication with these words:

"We desire to have these cores made of good iron, practically duplicates of the samples herewith, the same then to be covered complete with not less than 1/16" nor more than 3/32" in thickness of hard rubber."

We also furnished you at that time with samples of both propellers made of iron ready to be covered.

Under date of April 9th, the American Hard Rubber Co. quoted you prices on said propellers, and stated that they were sending by mail under separate cover a sample of what they proposed to furnish. This sample (dated April 7, 1909, Est. 1213) I have carefully examined, but it is not what we ordered, and as made would be utterly useless for our purposes. The propeller furnished is made of rubber without the iron center. The propellers that we require must be made as stated in our former letter, of good iron, including rod and propeller, all fastened together, and afterwards covered with hard rubber. We could not use this propeller without the iron center, because they are both used in a hot solution, and without

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

Superintendent - 2

the iron center they would become soft and useless.

Will you please resubmit the matter to the said American Hard  
Rubber Co. for their further consideration?

Very respectfully,

*J. J. Wilson*

Melter and Refiner.

Recd To  
32  
31-  
31-

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

April 26, 1909.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

I beg to submit the following list of supplies, estimated to be needed by the Melter and Refiner's Department during the fiscal year beginning July 1, 1909:

Graphite Goods:

Crucibles, No. 80 Mint Special . . . . .	600
" " 14 . . . . .	25
Cups, No. 3, heavy, 31-1/2 ozs. Troy. . . . .	350
" No. 4 " 35 " . . . . .	250
Covers for No. 80 Crucibles . . . . .	125
Rings, 2" for ditto . . . . .	200
" 4" " " . . . . .	100
Gold Stirrers, round, Mint special . . . . .	140

Fire clay Goods:

Pedestals, S-195 . . . . .	200
Quarter slides, S-170 . . . . .	500
" " S-20 . . . . .	600
Fire clay . . . . .	5 tons
Furnace Bodies, Sets S-163, A,B,C,D, . . . . .	18 sets
Top tiles, S-163-G . . . . .	40
Fire brick, standard . . . . .	10,500
" " splits . . . . .	1,100
" " soaps . . . . .	1,000
Hood tiles, rights, 2935 . . . . .	28
" " lefts, 2936 . . . . .	28
" " tops, 2934 . . . . .	28
20 gm. clay crucibles . . . . .	100
covers for same . . . . .	25
40 gm. clay crucibles . . . . .	100
Covers for same . . . . .	25
Furnace body for Fletcher gas furnace #41 . . . . .	1
" cover " " " " . . . . .	1
Fire brick cylinder for Laboratory furnace . . . . .	3
Magnesite brick arch . . . . .	500

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

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Acids and Chemicals:

Sodium Hydrate, C.P.	15	lbs.
Potassium " "	15	"
Calcium Chloride, C.P.	5	"
Mercury . . . . .	225	"
Caustic Soda . . . . .	30	"
Cyanide Potassium, fused white, 30% . . . . .	10	"
" " 98% to 100% C.P. . . . .	5	"
Copper sulphate, Com. . . . .	500	"
Ammonium Chloride " . . . . .	500	"
Stannous chloride, C.P. . . . .	5	"
Common salt . . . . .	500	"
Crushed Rock salt . . . . .	10	tons
Potassium Carbonate, Com'l . . . . .	10	lbs.
Test lead, C.P. . . . .	25	"
Litharge, C.P. . . . .	25	"
Talcum powder . . . . .	10	"
Phenol Sodique . . . . .	15	bottles
Gelatine, pure . . . . .	600	lbs.
Magnesite . . . . .	500	"
Grain alcohol . . . . .	25	gals.
Wood " . . . . .	25	"
Acetic acid, Com'l, 30% . . . . .	25	lbs.
Hydrochloric Acid, Com'l, 22 deg. Be. . . . .	50	tons
Nitric Acid, Com'l, free from chlorine, 38 deg. Be. . . . .	40	"
Sulphuric Acid " 66 deg. Be. . . . .	15	"
Ammonium Hydrate, Com'l, 26 deg. Be. . . . .	5	"
Sulphurous acid, C.P. . . . .	10	cans
Acetic acid, C.P., 99-1/2% . . . . .	25	lbs.
Oxalic acid, Com'l . . . . .	25	"
Citric acid, C.P. . . . .	10	"
Hydrofluoric acid, C.P. . . . .	5	"
Ammonium Hydrate, C.P. . . . .	500	"
Hydrogen Peroxide . . . . .	12	"
Iron Sulphate, Com'l . . . . .	12	tons
Zinc slab, 99% . . . . .	4	"
Sodium Carbonate, C.P. . . . .	25	lbs.
Metallic Sodium . . . . .	2	"
Potassium Nitrate, C.P. (Powd.) . . . . .	5	"
Hydrochloric acid, strictly C.P., 1.20 Sp.Gr. . . . .	1/2	ton
Nitric acid, " " 1.42 " " . . . . .	1/2	"
" " fuming " " 1.60 " " . . . . .	500	lbs.
Sulphuric acid, strictly C.P. 1.845 " " . . . . .	1/2	ton

# MINT OF THE UNITED STATES AT DENVER,

## MELTER AND REFINER'S DEPARTMENT,

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### Rubber Goods:

* Gauntlets, 22 inch	10 pairs
* Black rubber gloves, 4 inch	24 doz. prs.
* White " "	24 doz. prs.
Tubing, white, 1/8" to 1-1/2" diam., med. wall	50 ft.
" " 1/8" to 1" " heavy wall	50 "
" pure gum, 3/16" to 3/4" " "	100 "
Sheeting " "	10 lbs.
Bulbs, 25 C.C. capacity	6
" 50 " "	6
" 2 " "	6
" 5 " "	6
Stoppers, assorted	20 lbs.
Pure gum pads for copper plate dressing, 4"x6"	1/4 doz.
" " " " 6"x6"	1/4 "

### Glass, Porcelain, and Earthenware Goods:

Watch glass, best quality, 2 inch diam.	1 doz.
" " " 3 " "	1 "
" " " 4 " "	1 "
" " " 6 " "	1 "
" " " 8 " "	1 "
Precipitating jars, with lip, 2 gal. cap.	1/2 "
Assorted glass tubing rods	25 lbs.
Test tubes, 8"x1"	25 "
" " 4"x1/2"	10 doz.
" " 3"x3/8"	5 "
Glass troughs, 6"x8"x12-1/2"	3 "
" " 4"x4"x8"	1/4 "
Beakers, Bohemian style, plain form #1 to #9	1/4 "
" " " " Griffin's lipped #00	6 nests
" " " " #2	6 doz.
" " " " #3	1/2 "
" " " " #5	1/2 "
" " " " #8	1/2 "
" " " " #12	1/2 "
Evaporating dishes, German porcelain, 3-1/2" dia.	2 "
" " " " 8" "	1 "
" " " " 12" "	1 "
" " " " 16" "	1 "
Casseroles, Royal Berlin porcelain, 2" diam.	1 "
" " " " 3-3/4" "	1 "
" " " " 6-1/2" "	1 "

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

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Glass, Porcelain, and Earthenware Goods: (continued)

Flasks, flat bottom, ring neck, 8 oz. capacity	3 doz.
" " " " " 16 " " "	3 " "
" " " " " 32 " " "	4 " "
" Erlenmeyer " " " " "	1/2 " "
" " " " " " " " "	1/2 " "
" " " " " " " " "	1/2 " "
" " " " " " " " "	1/2 " "
" " " " " " " " "	1/2 " "
Funnels, Bunsen's ex. long stem, 1-1/2" diam.	1 " "
" " " " " " " " "	1 " "
" " " " " " " " "	1/2 " "
" Best German glass	1/2 " "
" separatory cylindrical shape, 4 oz. cap.	1/2 doz.
" " " " " " " " "	1/4 " "
Porcelain crucibles (Royal Berlin) 1" diam.	100
" " " " " " " " "	100
" " " " " " " " "	100
" " " " " " " " "	25
Pipettes, Mohr's, accurately graduated, 1 c.c. cap.	1/2 doz.
" " " " " " " " "	1/2 " "
" " " " " " " " "	1/2 " "
" " " " " " " " "	1/2 " "
" Volumetric, 25 c.c. cap.	1/2 " "
" " " " " " " " "	1/2 " "
" " " " " " " " "	1/2 " "
Burettes, patent (3 ways glass stop cock) 100 c.c. cap.	1/4 doz.
" Mohr's, 50 c.c. cap.	1/2 " "
" " " " " " " " "	1/2 " "
China pitchers, 6 pt.	2 doz.
" " " " " " " " "	2 " "
Earthenware pitchers, 4 gal.	2 " "
Soup plates, 8" and 10"	4 " "
Large mouth bottles, 12 oz.	1/2 " "
" " " " " " " " "	1/2 " "

Mitts, Gloves, Sleeves, Aprons:

* Aprons, Blue denim, men's	50 doz.
* Men's sleeves, blue denim	50 doz.prs.
* Men's aprons, asbestos covered	1 doz.
* Men's sleeves, asbestos covered	1 doz.prs.
* Men's buck gloves, heavy	450 prs.
Men's buck mitts	20 " "
* Asbestos Mitts	100
* Carpet Mitts	500
* Men's Fire proof buck gloves	1 doz.prs.
* Blacksmith aprons, muleskin, with bib	1 doz.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

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Miscellaneous:

* Lard Oil . . . . .	3 bbls.
Screened sand . . . . .	3 tons
Leather belting, 1-1/4 inch wide . . . . .	50 ft.
Conical moulds, 12"x14" deep . . . . .	1/4 doz.
* Crash towelling . . . . .	200 yds.
Iron turnings . . . . .	2 tons
Files, 14" flat bastard . . . . .	1 doz.
* Bleached cheese cloth . . . . .	5,000 yds.
* Unbleached sheeting, 10/4's wide . . . . .	3,000 "
Water hose, 1", 3/4", 1/2" - 4 ply . . . . .	50 ft. each
Steam " 1" . . . . .	50 "
Carpenter's chalk . . . . .	3 boxes
Silk elastic, 5/8" wide . . . . .	.25 yds.
Turpentine . . . . .	25 gals.
Horn spoons, 10" . . . . .	1 doz.
" " 4" . . . . .	1 "
" scoops, 5"x1-1/2", largest diam. . . . .	1 "
Brass wire screen, 20 mesh, 36"x100" . . . . .	
" " " 30 " 36"x120" . . . . .	
" " " 40 " 36"x120" . . . . .	
Screw-head stove bolts, flat, 5/16"x2" . . . . .	4 doz.
Galvanized iron water tubs, 30" . . . . .	2
" " " buckets, water . . . . .	4
Shovel, No. 3, long handle, square point . . . . .	1
" " " short " " " . . . . .	1
Striped bed ticking, extra heavy . . . . .	10 yds.
* Tailing sacks . . . . .	300
Plows for glass mill . . . . .	1 set
Screen frames for ditto . . . . .	1 "
Heavy seamless tin pans, 8 inch . . . . .	1/2 doz.
8 lb. sledge with handle . . . . .	1
Gold pan, 7" . . . . .	1
* Twine . . . . .	40 lbs.
* Machine oil . . . . .	2 gals.
Wire screen brushes, 2-1/2"x6" . . . . .	1/6 doz.
Pointing trowels . . . . .	1/6 "
Respirators (covers) . . . . .	1 "
Asbestos cement . . . . .	5 cans
Asbestos board, 1/4" thick . . . . .	40 lbs.
" " 1/16" " . . . . .	20 "
Rubber cement (Brazilian gum) . . . . .	2 "
Filter paper, S. & S., #589, 7 cm. Diam . . . . .	1000
" " " " 11 " " . . . . .	1000
" " French white (sheets) 21"x17" . . . . .	1000

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

6

Brushes, Mops, etc.

12 best whisk brooms	2 doz.
Floor brushes, Defender #12 . . . . .	2 "
" " " 16 . . . . .	3 "
Furnace brushes . . . . .	4 "
Dust brushes . . . . .	2 "
Fibre " . . . . .	2 "
Mop sticks, #10 . . . . .	3 "
Mops, cotton . . . . .	

Fluxes:

Borax glass, ground . . . . .	20 bbls.
Bicarbonate of soda . . . . .	25 "
Charcoal, MXX, for gold . . . . .	7 bbls.
" MBXX " silver . . . . .	22 "
" granular . . . . .	1 "
Nitre . . . . .	7 "
Silica . . . . .	500 lbs.
Bone ash . . . . .	2000 "
Cryolite (Greenland) . . . . .	1 bbl.

Miscellaneous: (continued)

Hoffman's extra heavy clamps . . . . .	2 doz
Steel spatulas, 3" blade . . . . .	1 "
" " 6" " . . . . .	1/2 "
" " 12" " . . . . .	1/2 "
Wood stoppers, assorted . . . . .	2 lbs.
Oilers, brass . . . . .	1 doz.

\* Samples to accompany all starred articles.

Respectfully submitted,

*J. W. Wilson*  
Melter and Refiner.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

April 27, 1909.

Hon. Frank M. Downer,  
Superintendent, U. S. Mint,  
Denver.

Sir:

The Melter and Refiner's department is in need of half a dozen carborundum rubbing bricks for leveling and smoothing the grinding bed of our Elspass mill, and for the information of The Carborundum Co. of Niagara Falls, N. Y., the makers of said bricks, I submit the following facts, so that they may be enabled to give us the benefit of their judgment as to the grain and grade of said bricks:

The ring or tread that we desire to grind level is made of steel, quite hard, is five feet and four inches in diameter on the outside, and width of face to be ground seven inches. The work will be fed automatically, and the speed at which the bed will turn will be from 25 to 28 revolutions per minute. Our guess (and that is all it is) is that we need No. 210 Rubbing bricks, 8x4x4 inches, with grain of 30 and grade, Scale M. The work will be all horizontal surface work.

Very respectfully,

*John W. Wilson*  
Melter and Refiner.

WEIGHTS AND MEASURES OF BULLION BALANCES.

Exhibit of the United States at D E N V E R

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to, Superintendent of the Mint by him during the Month of April, 1909.

**GOLD.**

[illegible]

**SILVER.**

[illegible]

**CORRECT:**

May 1

1909

*Superintendent.*

Molter and Refiner.

U. S. MINT SERVICE.  
Form No. 65.  
Ed. Oct. 22-08-500.-8x10 1/2.

H

# MELTER AND REFINER'S OPERATIONS.

At Denver, Colorado, May 1<sup>st</sup>, 1909  
of the United States

The following statement shows in standard ounces the total amount of bullion in the different forms delivered to the Melters of this Department during the month of April, 1909, and the amount of metal returned in ingots, bars, etc., and recovered with the apparent losses and gains:

METAL OPERATED UPON.	WEIGHT OF METAL.			RECOVERY.				
	DELIVERED TO THE MELTERS.	RETURNED BY MELTERS IN INGOTS, BARS.	RETURNED IN TOPS, BARS, CONDENSED.	APPARENT GAIN.	APPARENT LOSS.	FROM SWEETS.	FROM OTHER SOURCES.	APPARENT NET LOSS.
	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.
Gold Ingots,	222.025.79	217.705.19	4.226.71		4.3.89	81.04		37.15
Gold Bars,								
TOTAL,								
Silver Ingots,	228.976.82	225.170.46	3.806.88		22.8.49	99.57		12.5.92
Silver Bars,								
TOTAL,								

I certify the above to be a correct statement.

Approved:

*Superintendent.*

*See Certificate*  
Melter and Refiner.

U. S. MINT SERVICE OF THE MINT, Washington.

Stand. 022.

C.B.

SWL

MINT

Denver

Melter and Refiner's

April, 1909

Bush, Wm.			30	Leave
Campbell, A.R.	1	1	30	"
Chaffee, D.		1		"
Dakin, C.W.		7		"
Hetrich, J.M.		3		"
McElroy, A.B.	1			"
O'Brian, W.S.	6			Sick
Schell, E.P.		3		Leave
* Shields, B.G.	4			"
Spencer, G.N.	1	3	30	"
St. John, F.	1	6		"
Stoddard, X.T.	1		30	"
Whitaker, S.R.		5		"
Whitehead, H.R.		1	30	"
Wirth, B.P.	1	7		"

\* Shields on pay-roll of U.S. Assay office, New York, after April 15th

1. Product: a. Gold  
b. Silver

Total	238,577.68
-------	------------

a. Labor	\$2083.33
b. Crucibles	129.00
c. Acids	444.25
d. Supplies	265.51
e. Mitts, gloves, aprons	91.00
f. Chemicals	15.00
g. Sweeps cellar	243.09
h. M. & R. Gen'l	208.33
i. Fuel	190.20
j. Power	674.75
k. Repairs	150.80
l. Light & ventilation	100.00
m. Incidentals	4.65
n. Assays	338.74
o. Sick leave, vacation & holidays	60.52

Total \$4998.17

## 58.60

Total expense \$5054.77

4. Fine bullion, .992 & over, Denver Ref'y, silver	98,150.00
Deposits	3,485.16

Total fine bullion 101,635.16

5. Slimes, Assayers & Sweeps bars, &c, no charges	101,635.16
6. Crude bullion at 100%	77,892.44

6. Crude bullion at 7-1/2¢ per oz.	389.93
7	77.17
6-1/2	94.62
6	8.79
5-1/2	112.99
5	44.24
4-1/2	6,170.93
4	161,937.35
3-1/2	45.62
2-1/2	119.93
2	4,908.08
1-1/2	46.89
1	12,859.87
3/4	32.55
1/2	4,440.83

Total crude bullion 191,886.79

Total amount operated upon 370,814.39

	Total amount operated upon
7. Cost per ounce, total operated upon	.013478
8. Average " " " " "	.013606
9. Cost per crude ounce	.026129
10. Average " " "	.021044

1. Amount of good ingots: a. Gold 228,978.80  
b. Silver  
Total 451,002.59

2. Amount of good ingots: a. Half Eagles 217,705.19  
b. Quarter dollars 225,170.45  
Total 442,875.64

	Gold		Silver		Total
	Total	Per oz.	Total	Per oz.	
a. Labor	385.90	.001772	453.02	.002011	838.92
b. M. & R. Gen'l	95.93	.000440	112.50	.000499	208.33
c. Mitts & gloves	4.75	.000021	6.00	.000026	10.75
d. Crucibles	12.84	.000058	24.00	.000106	36.84
e. Sweeps cellar	8.39	.000038	9.85	.000043	18.23
f. Supplies	9.47	.000043	10.38	.000046	19.85
g. Fuel	32.70	.000150	40.20	.000178	72.90
h. Power	29.00	.000133	34.06	.000151	63.06
i. Light & Ven.	9.81	.000044	11.28	.000050	20.99
j. Repairs	24.02	.000110	28.18	.000125	52.20
k. Incidentals	0.00	.000000	0.00	.000000	0.00
l. Sick leave &c	13.30	.000061	15.61	.000069	28.91
m. Alloy copper	122.93	.000564	79.94	.000355	202.87
Totals	\$748.73	.003439	\$825.02	.003663	\$1573.75

4. New Equipment

Total expense

42.74

\$1616.49

5. Percentage of good ingots: a. Gold 98.0  
b. Silver 98.3

6. Average cost of ingots, per oz. for 10 months: a. Gold .003567  
b. Silver .003919

7. Cost distributed as follows: a. Half eagles \$748.73  
b. Quarter Dollars 825.02  
Total \$1573.75

#### SWEEPS CELLAR

1. Product: a. Gold std. ozs. 127.08  
b. Silver " " 322.78  
c. Avair. lbs., Tailings 7,929

2. Costs: a. Labor \$182.75  
b. Power 16.61  
c. Light & van. 20.00  
d. Supplies 4.76  
e. Repairs 36.45  
f. Incidentals 0.00  
g. Sick leave, &c .75  
Total \$261.32

3. New Equipment  
Total expense \$261.32

4. Tailings contained: a. Gold 22.06  
b. Silver 224.65

5. Percentage of extraction: a. Gold, 85.2 b. Silver, 58.9

6. Departments charged as follows: a. Refinery \$243.09  
b. Ingot 18.23

## MELTERS AND REFINERS OF BULLION BALANCES

**Suit of the United States at** D E N V E R

Gold and Silver Bullion Balances in the Melter and Refiner's hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of May, 1909.

**GOLD.**

RECEIVED		STANDARD OUNCES.		DELIVERED		STANDARD OUNCES.	
Balance	May 1	19					
Contained in Gold Deposits			300	453	547		266
Contained in Silver Deposits			66	235	155		059
Contained in			6	101	595		910
Clippings, blanks, etc.			8	060	698		
	Seattle Dep.		81	691	320		
	Salt Lake Dep.		6	259	896		
	Gold Exchg. bars			47	707		
	Silver "			1	763		
	Con'd coin		3	100	490		
			471	952	171		
						19	
							205
							811
							974
							471
							952
							171

**SILVER.**

STANDARD OUNCES.				STANDARD OUNCES.			
Received				Delivered			
Balance	May 1 19	270	770	88	Ingot	176	896
Contained in Gold Deposits		9	664	60	Bars, Fine		80
Contained in Silver Deposits		22	811	11	Bars, Standard		
Contained in			962	85	Bars, Unparted		
Clippings, blanks, etc.	Seattle Dep.	45	091	30	Bars		
	Salt Lake Dep.	6	572	51	Sweeps Refinery		424
	Gold Exchd. bars		13	85	" Ingot		148
	Silver "		90	72			36
	Coin'd coin	6	927	20	Balance May 23, 1909	185	504
		362	975	02		362	975
				02			02

**CORRECT:**

June 1 1908.

Superintendent.

*Scutellaria*  
Molte and 7  
rechner.

# MELTER AND REFINER'S OPERATIONS.

Mint of the United States  
At Denver, Colorado, June 2<sup>nd</sup>, 1909

The following statement shows in standard ounces the total amount of bullion in the different forms delivered to the Melters of this Department during the month of May 1909, and the amount of metal returned in ingots, bars, etc., and recovered with the apparent losses and gains:

METAL OPERATED UPON.	WEIGHT OF METAL.		RECOVERY.			APPARENT TOTAL GAIN.
	DELIVERED TO THE MELTERS.	RETURNED BY MELTERS IN INGOTS, BARS.	RETURNED IN TOPS, BARS, CONDENSED.	APPARENT GAIN.	APPARENT LOSS.	FROM OTHER SOURCES.
	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.
Gold Ingots,	173.638.650	169.223.400	4.371.770			
Gold Bars,						
TOTAL,	173.638.650	169.223.400	4.371.770	43.480	11.764	11.764
Silver Ingots,	124.231.75	120.639.90	3.502.15			
Silver Bars,						
TOTAL,	124.231.75	120.639.90	3.502.15	89.70	58.66	58.66

I certify the above to be a correct statement.

J. J. Milne  
Melter and Refiner.

Approved:

Superintendent.

To the DIRECTOR OF THE MINT, Washington.

Melter and Refiner's

May, 1909

Cartlett, H.D.		3		Leave
Campbell, A.R.	2	1	30	"
Dakin, J.W.			30	"
Heirich, J.M.		4		"
Schell, E.P.	3	6		"
Spencer, C.W.	1			"
St. John, P.	2		30	"
Stoddard, V.T.	1	4	30	"
Taggart, E.H.	9			Sick
Whitaker, S.R.		3	30	Leave
Wirth, B.P.			30	"

May/03

## REFINERY

1. Product: a. Gold	131,751.29	fine	ozs.
b. Silver	82,492.60	"	"
Total	214,243.89	"	"

## 2. Costs:

a. Labor	\$1768.63
b. Crucibles	120.00
c. Acids	485.64
d. Supplies	238.62
e. Mitts, gloves, aprons	64.75
f. Chemicals	25.00
g. Sweeps cellar	177.83
h. M. & R. Gen'l	198.75
i. Fuel	156.30
j. Power	585.23
k. Repairs	140.97
l. Light & ventilation	100.00
m. Incidentals	0.30
n. Assays	306.51
o. Sick leave, vacation & holidays	132.02

Total

\$4478.60 (Including settlement costs of \$1172.80)

## 3. New Equipment

55.36

Total expense

\$4533.96

4. Fine bullion, .992 & over, Denver Ref'y, silver	26,025.00
" " " " " Deposits	2,714.51

Total fine bullion

29,639.51

5. Slimes, assayer's bars, sweeps bars, no charges	47,210.07
--	-----------

6. Crude bullion at 7-1/2d	47.48
6-1/2	36.93
5-1/2	258.04
5	26.71
4-1/2	59.99
4	89,675.40
3-1/2	145.15
2-1/2	1,455.08
2	8,900.60
1-1/2	42.17
1	19,392.73
3/4	113.65
1/2	5,884.11
4/10	29.72

Total crude bullion

126,067.76

Total amount operated upon 202,917.34

7. Cost per ounce total operated upon	.022071
8. Average ditto	.013123
9. Cost per crude ounce	.035525
10. Average ditto	.021863

1. Amount bullion melted:	Gold	124,231.75			
	Silver	173,638.65			
	Total	297,870.40			
2. Amount of good ingots:	a. Half Eagles	120,639.90			
	b. Quarter Dollars	169,223.40			
	Total	289,863.30			
3. Cost of ingots:	Gold		Silver		
	Total	Per oz.	Total	Per oz.	Total
a. Labor	\$356.55	.002955	\$297.68	.001759	\$654.23
b. M&R Gen'l	108.32	.000297	90.43	.000534	198.75
c. Mitts, gloves	8.00	.000066	6.25	.000036	14.25
d. Crucibles	16.84	.000139	16.00	.000094	32.84
e. Sweeps cellar	36.33	.000301	30.33	.000179	66.66
f. Supplies	14.59	.000120	5.44	.000032	20.03
g. Fuel	20.10	.000166	23.70	.000140	43.80
h. Power	31.60	.000261	26.38	.000155	57.98
i. Light, vent'n	10.90	.000090	9.10	.000053	20.00
j. Repairs	17.31	.000143	14.45	.000085	31.76
k. Incidentals	0.00	.000000	0.00	.000000	0.00
l. Sick leave &c	33.55	.000278	28.01	.000165	61.56
m. Alloy copper	26.55	.000220	43.95	.000259	70.50
Totals	\$680.64	.005641	\$591.72	.003498	\$1272.36
(Settlement costs in above amounts, \$100.24)					
4. New equipment					13.50
			Total expense		\$1285.86
5. Percentage of good ingots:	a. Gold	97.1			
	b. Silver	97.4			
6. Average cost of ingots for 11 months:	a. Gold	.003666			
	b. Silver	.003893			
7. Cost distributed as follows:	a. Half eagles	\$680.64			
	b. Quar. Dollars	591.72			
	Total expense	\$1272.36			

## SWEEPS CELLAR

1. Product:	a. Gold, std. ozs.	141.64			
	b. Silver " "	292.23			
	c. Tailings, avoird. lbs.		8,600		
2. Costs:	a. Labor	\$185.19			
	b. Power	21.11			
	c. Light, vent'n	24.02			
	d. Supplies	30.59			
	e. Repairs	.78			
	f. Incidentals	0.00			
	g. Sick leave &c	8.50			
	Total	\$270.19			
3. New Equipment		0.00			
	Total expense	\$270.19			
4. Tailings contained:	a. Gold	31.72	std. ozs.		
	b. Silver	289.58	" "		
5. Percentage of extraction:	a. Gold	81.7			
	b. Silver	50.2			
6. Departments charged as follows:					
	Refinery	\$177.83			
	Ingot room	66.66			
	Coiner	25.70			
	Total	\$270.19			

MINT OF THE UNITED STATES AT DENVER  
MELTER AND REFINER'S DEPARTMENT,

Report of the Melter and Refiner of the Denver Mint for the year  
ended June 30, 1909

The Melter and Refiner received from the Superintendent during the  
fiscal year ended June 30, 1909:

GOLD ACCOUNT

	Standard ozs.	Standard ozs.
In Bullion		2,961,626.487
Returned prior to settlement	2,716,326.627	
Returned at settlement	<u>246,209.592</u>	<u>2,962,526.210</u>
Surplus in Gold recovered		909.738

SILVER ACCOUNT

In Bullion		2,966,357.37
Returned prior to settlement	2,766,470.74	
Returned at settlement	<u>201,302.66</u>	<u>2,967,773.40</u>
Surplus in Silver recovered		1,416.03

The surplus was recovered from unreported fractions of assays,  
from the difference between standard and actual fineness of ingots  
delivered, and from fractional gains in weights of deposits.

## MINT OF THE UNITED STATES AT DENVER,

2

MELTER AND REFINER'S DEPARTMENT,

The following melts were made:

	Gold	Silver	Gold and Silver	Total
Deposits	4,175	623		4,798
Anodes	144	676		820
Cathode Ingots	50	25		75
Ingots	510	737		1,247
Sweats			926	926
Mint bars	310	114		424
Slimes			550	550
Settlement bars	20	28		48
Miscellaneous			176	176
Totals	5,209	2,203	1,652	9,064

Ingot Melts condemned: None. Remelts: Gold, one; Silver, none.

The Sweeps Cellar extracted 1,436.204 standard ounces of gold and 3,199.24 standard ounces of silver, and produced 974 sacks of mill tailings which contained 324.562 standard ounces of gold and 1,949.86 standard ounces of silver.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

3

Refinery operations, covering a period of nearly ten months, were  
as follows:

GOLD ACCOUNT

	Standard ozs.	Standard ozs.
Delivered to the Refinery		2,042,995.755
Returned prior to settlement	1,974,442.981	
Returned at settlement in bars	69,087.602	
Returned " " in sweeps	64.858	2,043,595.441
Surplus in Gold returned		599.686

SILVER ACCOUNT

Delivered to the Refinery		1,839,604.62
Returned prior to settlement	1,729,610.04	
Returned at settlement in bars	109,215.78	
Returned " " in sweeps	521.03	1,839,346.85
Loss in Silver operations		257.77

The Refinery also recovered 39.35 ounces of sponge Platinum,  
and 1,352 Avoirdupois lbs. of electrolytic copper.

Earnings of Refinery: Charges collected	\$87,115.17
Surplus bullion recovered	17,581.54
Platinum	885.37
Copper	199.42
Total	\$105,781.50

*James Wilson*  
Melter and Refiner.



U. S. MINT SERVICE.  
FORM NO. 210.  
Ed. 6 10 1900 900.—8 x 10 1/4.

MELTER AND REFINERS OF BULLION BALANCES.

Mint of the United States at DENVER

Gold and Silver Bullion Balances in the Melter and Refiners hands and Receipts from and Deliveries to the Superintendent of the Mint by him during the month of June, 1909.

GOLD.

Received	STANDARD OUNCES.				Delivered	STANDARD OUNCES.			
	Balance	June 1 1909	205	811		Ingots	132	698	120
Contained in Gold Deposits			50	487	Bars, Fine			468	744
Contained in Silver Deposits			4	381	Bars, Standard				
Contained in				9	Bars, Unparted				
Clippings, blanks, etc.				289	Bars				
				101	Sweeps Refinery			64	858
Sweeps bar				989	" Ingot			56	286
& Con'd coin				015					
Seattle Dep.				230					
Salt Lake "				852					
G&S Exchg. bars				39					
Surplus in Set.				909					
				732					
				379	Balance delivered in settlement			246	209
				497				379	592
				599				497	599

SILVER.

Received	STANDARD OUNCES.				Delivered	STANDARD OUNCES.			
	Balance	June 1 19	185	504		Ingots	48	341	05
Contained in Gold Deposits			8	585	Bars, Fine			364	38
Contained in Silver Deposits			16	582	Bars, Standard				
Contained in				4	Bars, Unparted				
Clippings, blanks, etc.				57	Bars				
				30	Sweeps Refinery			521	03
Sweeps bar				332	" Ingot			134	53
Seattle Dep.				746					
Salt Lake "				454					
G&S Exchg. bars				56					
Surplus in Set.				30					
				1	Balance delivered in settlement			201	302
				416				250	66
				683				683	65
				65					

CORRECT:

July 1, 1909.

Superintendent.

Melter and Refiner.

Arnold, R.G.	9			Leave
Bartlett, H.D.	8	4		"
Borstadt, Geo.	8			"
Bush, Wm.	8	4		"
Campbell, A.R.	10	4		"
Chaffee, D.	<del>10</del> <sup>9</sup>	4		"
Crary, J.H.	1			"
"	13			Sick
Dakin, C.W.	8	4		Leave
Dardis, W.N.	8			"
Gray, Geo. B.	8	1		"
Howard, M.	9	4		"
Lindhard, J.A.	10			"
McElroy, A.B.	9	4		"
Morrison, R.B.	9			"
O'Brian, W.S.	9			"
Pughe, J.F.	2	3		"
Ryan, P.		3		"
Smith, E.S.	9	4		"
Schell, E.P.	10			"
Spencer, G.N.	9	1	30	"
St. John, F.	1			"
Stoddard, X.T.	8			"
Taggart, E.H.	8			"
Whitaker, S.R.	8	3	30	"
Whitehead, H.R.	9	5	30	"
Winn, H.H.	6			"
Wirth, E.P.	5	5	30	"
"	10			Official leave (Phila.set'mt)

## MELTER AND REFINER'S OPERATIONS.

of the United States

At Denver Colorado, July 1st, 1909

The following statement shows in standard ounces the total amount of bullion in the different forms delivered to the Melters of this Department during the month of August, 1909, and the amount of metal returned in ingots, bars, etc., and recovered with the apparent losses and gains:

METAL OPERATED UPON.	WEIGHT OF METAL.		RECOVERY.						
	DELIVERED TO THE MELTERS.	RETURNED BY MELTERS IN INGOTS, BARS.	RETURNED IN TONGS, BARS, CONDENSED.	APPARENT GAIN.	APPARENT LOSS.	FROM SWEEPS.	FROM OTHER SOURCES.	APPARENT NET LOSS.	APPARENT TOTAL GAIN.
	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.	Stand. ozs.
Gold Ingots,	216.704.360	211.132.990	5.525.910		45.460	150.947	225.842		331.329
Gold Bars,	421.870.	421.870							
TOTAL,	217.126.230	211.554.860	5.525.910		45.460	150.947	225.842		331.329
Silver Ingots,	65.753.79	64.455.75	1.238.99		59.05	282.61	222.60		446.16
Silver Bars,	345.95.	345.95							
TOTAL,	66.099.74	64.801.70	1.238.99		59.05	282.61	222.60		446.16

*I certify the above to be a correct statement.*

Melter and Refiner.

Approved:

Superintendent.

TO THE DIRECTOR OF THE MINT, Washington.

# Annual Settlement, 1909

Gold Dep.	4624	298 91	752	233	249 755	77 38
1909	5	313 86	752 <sup>2</sup>	230 <sup>2</sup>	262 421	80 38
	9	299 52	747 <sup>2</sup>	239 <sup>2</sup>	248 768	79 70
4630		278 56	751	237	232 442	73 35
	2	294 91	611	372	200 211	121 89
	9	289 00	745 <sup>2</sup>	241 <sup>2</sup>	239 388	77 54
4640		272 68	743 <sup>2</sup>	242 <sup>2</sup>	225 263	73 47
	1	282 21	744 <sup>2</sup>	242 <sup>2</sup>	233 450	76 03
	2	262 46	745 <sup>2</sup>	242 <sup>2</sup>	217 404	70 71
4651		329 90	746 <sup>2</sup>	225 <sup>2</sup>	273 633	82 65
	9	285 44	748 <sup>2</sup>	237 <sup>2</sup>	237 390	75 32
4660		298 02	748	238	247 687	78 60
	5	298 91	746	243	247 763	80 70
	6	280 70	745 <sup>2</sup>	242 <sup>2</sup>	232 513	75 63
4673	1	042 23	833 <sup>2</sup>	033	965 220	38 21
	4	750 07	796 <sup>2</sup>	029 <sup>2</sup>	663 811	24 58
	5	622 02	938 <sup>2</sup>	054 <sup>2</sup>	646 628	57 66
	6	637 64	945 <sup>2</sup>	047	669 876	33 29
	7	506 66	812 <sup>2</sup>	030 <sup>2</sup>	457 401	17 17
	9	300 77	747	238	249 639	79 53
4680		273 72	746 <sup>2</sup>	239	227 035	72 68
	1	273 28	743 <sup>2</sup>	234 <sup>2</sup>	225 759	71 20
	4	178 53	790	184	156 709	56 59
	5	341 44	818 <sup>2</sup>	185	310 520	62 59
4691		661 79	937 <sup>1</sup>		639 160	

8611866

1577

Forward

8611866

139705

Gold Dep.	4636	294 31	742	246 <sup>2</sup>	242 642	80 60
1909	7	177 14	744 <sup>2</sup>	245 <sup>2</sup>	146 534	48 31
	8	218 00	853	133 <sup>2</sup>	206 615	32 33
	4710	732 83	846	011	688 860	8 95
	1	877 60	846	011 <sup>2</sup>	824 944	11 21
	2	301 86	743 <sup>2</sup>	244	249 369	81 83
	8	1 110 10	810	036	999 090	44 40
	9	752 94	941 <sup>2</sup>	047	787 658	39 32
	4720	639 75	798 <sup>2</sup>	033	567 600	23 45
	1	555 41	787	033	485 675	20 36
	2	560 04	840	047	522 704	29 24
	3	280 21	739 <sup>2</sup>	250	230 239	77 83
	4	296 06	740	250	243 427	82 23
	5	275 46	736	250	225 265	76 51
	8	697 23	755	197	584 898	152 61
	4732	742 15	938 <sup>2</sup>		773 897	
	3	257 13	739 <sup>2</sup>	246 <sup>2</sup>	211 275	70 42
	6	272 92	731	256 <sup>2</sup>	221 671	77 78
	7	247 37	745	244	204 767	67 06
	8	692 17	728 <sup>2</sup>	260	560 273	199 96
	4742	1 021 77	799	029 <sup>2</sup>	807 104	33 49
	3	817 45	755	031 <sup>2</sup>	517 971	21 61
	4	6 27	937	049 <sup>2</sup>	649 309	34 30
	5	666 76	937	051 <sup>2</sup>	694 171	38 15

20357824

274700

Forward.

20 357 824

2949 00

Gold Dep.

4746

729 26

849

012<sup>2</sup>

687 935

10 12

1909

7

646 61

849<sup>2</sup>

010<sup>2</sup>

610 327

7 54

8

261 78

735

255

213 787

74 17

4756

550 40

932<sup>3</sup>

570 428

7

373 84

894

371 347

8

270 88

731<sup>2</sup>

256<sup>2</sup>

220 165

77 20

9

235 18

738<sup>2</sup>

251

192 978

65 58

4760

212 12

813

178

191 615

41 95

1

372 07

611

376

252 594

155 44

2

291 52

430<sup>2</sup>

159<sup>2</sup>

139 443

51 60

4770

269 20

732<sup>2</sup>

255<sup>2</sup>

219 098

76 42

3

1

066 85

805

034<sup>2</sup>

954 838

40 80

4

749 87

933<sup>2</sup>

056

780 381

46 68

5

600 25

811

075

540 302

23 24

6

647 10

790

082

562 010

23 00

7

661 98

900

661 930

8

494 94

946

520 256

9

186 47

736<sup>2</sup>

240

152 594

51 59

4780

273 02

732<sup>2</sup>

253<sup>2</sup>

222 207

76 90

1

273 81

734

252

223 307

76 68

2

241 90

732

253

196 748

68 00

3

297 32

739

247

244 188

81 59

4

228 89

744<sup>2</sup>

240<sup>2</sup>

180 342

51 16

5

552 25

728<sup>2</sup>

236

481 872

146 22

Forward

29 733 376

4205 24

Forward

29 733 376

4 205 24

Sold Dep.

4786	558 60	726 <sup>2</sup>	238 <sup>2</sup>	450 914	147 71
1909 7	608 99	851 <sup>2</sup>	013 <sup>2</sup>	575 833	9 13
8	573 32	850 <sup>2</sup>	009 <sup>2</sup>	541 787	5 73
4816	398 14	736 <sup>2</sup>	250 <sup>2</sup>	243 977	82 98
7	244 28	741 <sup>2</sup>	245 <sup>2</sup>	201 259	66 63
4824	160 70	525 <sup>2</sup>	455 <sup>2</sup>	93 741	81 24
4836	258 82	732 <sup>2</sup>	169 <sup>2</sup>	210 650	48 60
7	736 78	809 <sup>2</sup>	036 <sup>2</sup>	662 283	29 47
8	935 88	939 <sup>2</sup>	053 <sup>2</sup>	976 954	55 11
9	311 83	938 <sup>2</sup>	051 <sup>2</sup>	324 996	17 67
4840	977 20	834 <sup>2</sup>	038 <sup>2</sup>	905 538	41 25
1	194 59	735 <sup>2</sup>	251 <sup>2</sup>	158 915	54 26
2	264 95	737 <sup>2</sup>	251 <sup>2</sup>	217 111	73 89
4	368 42	751 <sup>2</sup>	230 <sup>2</sup>	324 114	99 47
4854	684 13	935 <sup>2</sup>	251 <sup>2</sup>	710 735	
7	235 14	733 <sup>2</sup>	254 <sup>2</sup>	191 639	66 49
8	172 72	613 <sup>2</sup>	368 <sup>2</sup>	117 689	70 65
4868	306 08	738 <sup>2</sup>	251 <sup>2</sup>	252 609	85 91
3	315 75	738 <sup>2</sup>	252 <sup>2</sup>	258 898	88 40
4	533 72	718 <sup>2</sup>	249 <sup>2</sup>	441 745	153 19
5	551 42	720 <sup>2</sup>	247 <sup>2</sup>	441 136	151
6	501 16	787 <sup>2</sup>	024 <sup>2</sup>	516 936	1 16
7	650 51	786 <sup>2</sup>	024 <sup>2</sup>	567 762	17 60
8	173 34	790 <sup>2</sup>	188 <sup>2</sup>	152 154	36 20

39 272 731

5 733 24

Forward

39 272 751

5 704 00

old Dep.

4869	313 36	815 <sup>2</sup>	171 <sup>2</sup>	283 938	59 71
1909	4875	779 93	912	790 329	
6	228 28	547 <sup>2</sup>	189 <sup>2</sup>	138 870	48 06
7	955 98	790 <sup>2</sup>	039 <sup>2</sup>	850 669	41 95
8	692 58	720 <sup>2</sup>	032 <sup>2</sup>	554 448	25 00
9	724 33	725	033 <sup>2</sup>	583 488	26 96
4880	422 70	718	037	337 220	17 37
1	897 55	921 <sup>2</sup>	042 <sup>2</sup>	918 991	42 38
2	801 20	439 <sup>2</sup>	254	391 252	226 11
3	1 037 04	437 <sup>2</sup>	253 <sup>2</sup>	504 116	292 09
7	265 85	736 <sup>2</sup>	251 <sup>2</sup>	217 553	74 29
8	272 34	739	248	223 621	75 04
9	317 82	740 <sup>2</sup>	247 <sup>2</sup>	261 495	87 40
4897	258 84	695 <sup>2</sup>	246	200 025	70 74
8	306 53	736	249 <sup>2</sup>	250 673	84 27
9	256 78	741	246	211 415	70 18
4900	625 15	734	219 <sup>2</sup>	509 844	152 46
5	282 20	736	254	250 776	78 64
6	245 24	737	254	200 824	69 21
4912	435 60	550 <sup>2</sup>	274 <sup>2</sup>	266 442	152 85
4924	688 81	944 <sup>2</sup>	044 <sup>2</sup>	722 867	34 05
5	675 72	955	035	717 389	26 27
6	921 81	750 <sup>2</sup>	031	777 026	32 09
7	616 07	763	031 <sup>2</sup>	522 880	31 56

ward

49 927 312

7 494 37

Forward

4 927 312

749438

Gold Dep.	4928	621 82	791 <sup>2</sup>	018	546 856	12 43
1909	9	793 41	791 <sup>2</sup>	017 <sup>2</sup>	697 760	15 42
	4939	311 35	747	240	258 420	83 02
	4940	290 47	746 <sup>2</sup>	241	240 928	77 78
	5	994 49	933	1	030 954	
	7	302 91	746	244	251 078	82 12
	8	307 08	749 <sup>2</sup>	240 <sup>2</sup>	255 729	82 05
	4951	254 53	745 <sup>2</sup>	242	210 877	68 45
	2	305 71	748 <sup>2</sup>	240	254 248	81 52
	5	1 124 41	764	201 <sup>2</sup>	954 499	251 74
	4979	978 47	879	044 <sup>2</sup>	955 639	48 37
	4980	1 008 38	875	045	980 369	50 41
	1	978 20	938	055	1 019 501	59 77
	2	293 44	738 <sup>2</sup>	251	240 783	81 83
	3	264 97	738	251	233 675	79 47
	4	291 96	738	251	239 407	81 42
	5	237 02	738	251	194 356	66 10
	4994	272 08	764	185	237 011	55 92
	6	620 70	808 <sup>2</sup>	013 <sup>2</sup>	557 595	9 31
	7	693 20	808 <sup>2</sup>	012 <sup>2</sup>	622 724	9 62
	8	1 016 10	904 <sup>3</sup>	1	021 462	
	9	290 53	737 <sup>2</sup>	252 <sup>2</sup>	238 073	81 50
	5000	245 85	742	246 <sup>2</sup>	202 689	67 88
	6	227 11	936	252	185 725	63 59

61557670

9204

Forward

Forward

61 557 676 9 004 10

Gold. Dep.	5009	282 54	736 <sup>2</sup>	252 <sup>2</sup>	231 211	79 36
1909	5010	704 80	755	233	591 248	182 44
	4	066 17	853	046	010 492	54 49
	5	720 47	931 <sup>2</sup>	059 <sup>2</sup>	745 686	47 63
	6	565 23	930	063	584 071	39 56
	7	261 27	799	048	231 949	13 93
	8	282 25	736	253	230 817	79 34
	9	278 02	735	255	227 049	78 77
	5020	933 62	749	238	778 979	246 99
	2	352 02	615 <sup>2</sup>	570 <sup>2</sup>	240 742	144 91
	3	703 38	899 <sup>3</sup>		708 184	
	5	277 43	734	254 <sup>2</sup>	226 259	78 45
	6	217 15	733	255 <sup>2</sup>	176 256	61 64
	5035	281 65	735 <sup>2</sup>	254 <sup>2</sup>	230 317	79 82
	6	243 62	742 <sup>2</sup>	243 <sup>2</sup>	200 926	67 26
	5045	342 70	817 <sup>2</sup>	172 <sup>2</sup>	311 286	65 68
	9	242 60	525	462	142 516	122 53

Forward

68 418 317 10 448 59

Forward

68 418 317 10 448 59

Silver Dep. 520		459 55	173	343	98 335	175 13
1909	1	568 43	173 <sup>2</sup>	340	109 520	214 74
	2	526 90	172 <sup>2</sup>	339	100 989	198 46
	3	497 84	173	340	95 657	187 99
	4	246 71	173	342	47 423	93 74
	5	494 26	174 <sup>2</sup>	343	95 631	188 36
	6	532 25	175 <sup>2</sup>	345	103 788	204 02
	7	531 57	175 <sup>2</sup>	343 <sup>2</sup>	103 656	202 88
	8	514 10	175	342	99 963	195 35
	9	540 38	174 <sup>2</sup>	343 <sup>2</sup>	104 773	207 44
530		439 98	177	349	86 509	170 57
	1	340 45	175	343 <sup>2</sup>	66 198	129 93
	2	529 90	517	526 <sup>2</sup>	116 162	192 93
540		389 20	044	897 <sup>2</sup>	19 027	388 11
	1	962 92	365	598	390 541	639 84
	2	400 93	110 <sup>2</sup>	948 <sup>2</sup>	49 225	376 65
551		370 47	491	495 <sup>2</sup>	202 111	203 96
	1	135 72	364	607	459 335	765 99
	2	929 30	875	877 <sup>2</sup>	82 441	964 56
	3	781 22	875	877 <sup>2</sup>	65 126	761 98
	4	335 55	875 <sup>2</sup>	877	76 469	911 64
	5					
	6	962 42	875	874	82 419	954 64
	7	929 45	875 <sup>2</sup>	876 <sup>2</sup>	69 946	803 39
	8	334 72	875 <sup>2</sup>	874 <sup>2</sup>	62 807	925 47

8.

71 221 941 20 586 8

Forward

71 221 941. 26 586 86

Silver Dep. 559	1	046 83	074	870 <sup>2</sup>	86 072	1	013 51
1909 560		921 52	074 <sup>2</sup>	868 <sup>2</sup>	76 281		687 21
1910 173		578 09	058	909	37 254		563 87
1911 373	1	047 93	334 <sup>2</sup>	628 <sup>2</sup>	389 480		731 40
1912 417		962 69	057	306	60 970		327 31
1913 513		175 42	379	601	73 871		117 14
1914 613		913 34	333 <sup>2</sup>	634	338 443		643 39
1915 713		213 66	326 <sup>2</sup>	651 <sup>3</sup>	77 511		154 66
1916 570		234 80	479	510	124 265		133 05
1917 117		329 16	312	654	79 442		160 32
1918 417		904 05	069 <sup>2</sup>	868 <sup>2</sup>	69 612		872 40
1919 513		904 97	069 <sup>2</sup>	869	69 883		973 79
1920 613		680 60	070	870	52 935		657 21
1921 713	1	109 17	069 <sup>2</sup>	871	65 632	1	073 43
1922 813	1	125 43	069 <sup>2</sup>	871	96 936	1	049 16
1923 913		562 07	205	410	128 027		256 06
1924 560		654 97	205 <sup>2</sup>	411	149 551		629 10
1925 113		636 60	205	407	148 043		287 97
1926 213		193 43	206	415	41 235		84 17
1927 313		418 93	206 <sup>2</sup>	411	26 121		191 31
1928 413		564 50	207	415	129 235		062 22
1929 513		560 86	205	410	127 731		257 50
1930 613		559 57	204	411	126 235		251 53
1931 713		318 73	180 <sup>2</sup>	393	63 223		107 30

9

Forward

73 940496 31 908 23

Forward

73 940 496 31 908 23

Sil. Dep.	589	357 14	069 <sup>2</sup>	859	27 579	340 87
1909	590	744 82	069 <sup>2</sup>	861	57 516	712 54
	1	745 95	070	862 <sup>2</sup>	58 018	714 86
	2	713 60	070	858	55 502	680 39
	3	966 47	318	848	341 486	695 85
	5	296 93	018 <sup>2</sup>	863	6 103	264 72
	6	413 19	053	893	24 332	409 97
	7	563 02	414 <sup>2</sup>	542 <sup>2</sup>	268 513	351 43
	8	1 204 70	056	932	74 959	1 247 53
	9	822 07	053	923	48 410	843 07
600		888 15	322 <sup>2</sup>	651	318 246	642 41
	3	200 99	387	594	86 425	132 65
	5	175 61	466	524	90 926	102 24
	8	279 53	407	572	126 409	177 65

75 524 920 39 244 2

Forward

Forward

524920 3924431

Seattle

Re-deposits 4957

4958	336 46	937	054	662 625	38 18
9	500 67	916	078	509 570	43 39
4960	329 12	916 <sup>2</sup>	078	335 153	28 52
1	546 52	914	082	555 021	49 79
2	544 67	816 <sup>2</sup>	175	494 136	105 90
3	1 043 54	819 <sup>2</sup>	138	950 201	160 00
4	957 45	819 <sup>2</sup>	138	871 811	146 80
5	1 129 68	819 <sup>2</sup>	138	1028 636	173 21
6	716 75	993 <sup>2</sup>	004	791 212	
7	790 52	996	002	874 842	
	846 60	996	002	939 117	

Forward

83 37244 39993

Forward

Salt Lake		4800	15 20	536 <sup>2</sup>	443	247 505	204 37
Re-deposits		1	49 77	810 <sup>2</sup>		314 987	
		2	467 68	516 <sup>2</sup>	467	268 396	242 67
		3	073 22	793	007	945 626	8 34
		4	097 58	795	007	969 529	8 53
		5	163 54	798	004	1 031 672	5 17
		6	737 98	772 <sup>2</sup>	117	633 432	95 93
		8	709 08	316 <sup>2</sup>	611	249 359	481 38
		9	797 64	242	692	214 476	613 29
		4810	762 66	261 <sup>2</sup>	664	221 595	562 67
		1	872 07	224 <sup>2</sup>	712	217 533	689 90
		2	931 66	225	713	232 915	738 08
		3	800 70	228	707	202 844	628 99
		4968	691 73	928 <sup>2</sup>		713 634	
		4971	636 45	484 <sup>2</sup>	483	342 611	341 55
		4	963 90	233	688	249 543	736 84
		5	983 93	232 <sup>2</sup>	688	254 181	752 15
		6	955 79	234	691	248 505	733 83
		7	715 03	230	691	182 218	547 44

Forward

91 277 838 47387

91277 805 47381 23

Forward

Refinery	1	5	2	193 65	961 <sup>2</sup>	039 <sup>2</sup>	2	343 549	93 83
Settlement	2	13	5	318 75	857	104 <sup>2</sup>	5	064 631	617 56
Gold	3	5	2	159 90	955 <sup>2</sup>	044 <sup>2</sup>	2	293 093	105 59
	4	14	5	510 10	836	124 <sup>2</sup>	5	118 270	762 23
	5	7	2	844 55	957	042 <sup>2</sup>	3	024 492	134 31
	6	6	2	498 20	945 <sup>2</sup>	053 <sup>2</sup>	2	624 497	149 56
	7	8	2	857 50	657	316	2	085 975	1 003 33
	8	35	2	007 50	958	039 <sup>2</sup>	2	136 872	88 16
	9	6	2	212 00	927 <sup>2</sup>	070	2	279 588	172 01
	10	36	6	521 90	998 <sup>2</sup>		7	235 685	
	11	16	6	555 35	871 <sup>2</sup>	113 <sup>2</sup>	6	344 122	826 71
	12	15	5	787 35	852	137	5	478 691	860 9
	13	22	3	895 40	993		4	297 924	
	14	58	2	245 45	951	044 <sup>2</sup>	2	372 692	100 7
	15	63	2	591 10	939 <sup>2</sup>	054 <sup>2</sup>	2	703 381	156 9
	16	55	2	137 75	938 <sup>2</sup>	056 <sup>2</sup>	2	229 198	134 8
	17	63	2	401 00	916	073	2	443 684	194 71
	18	8	3	057 00	614	162	2	764 886	550 16
	19	308		750 75	811	081 <sup>2</sup>		676 509	67 18
	20	143		435 90	535	177		259 118	83 78

Forward

150 004 662 83 511 93

Forward

155 054 662

83 511 98

Refinery	1	17	4	437 55	028 <sup>2</sup>	963 <sup>2</sup>	140 582	32 4 750 64
Settlement	2	19	4	875 50	022	951 <sup>2</sup>	119 178	32 5 154 48
Silver	3	17	4	615 10	090	895	461 510	32 4 589 46
	4	19	2	417 00	053	932 <sup>2</sup>	142 334	32 2 504 28
	5	17	4	478 50	023	928 <sup>2</sup>	114 450	4 610 36
	6	17	4	440 50	018	945 <sup>2</sup>	88 810	4 664 99
	7	17	4	416 40	049	918	240 448	4 504 72
	8	15	3	976 50	065 <sup>2</sup>	881	289 400	3 892 55
	9	12	3	199 50	023 <sup>2</sup>	942 <sup>2</sup>	83 542	3 350 58
	10	16	4	235 40	045 <sup>2</sup>	932	214 123	4 385 99
	11	15	4	069 30	084	890 <sup>2</sup>	379 801	4 026 34
	12	48	4	675 00		999		5 189 25
	13	47	4	543 50		999		5 043 28
	14	6	5	214 00		999 <sup>3</sup>		5 791 88
	15	5	4	283 50		998 <sup>2</sup>		4 752 30
	16	14	3	525 50	957 <sup>2</sup>	908 <sup>2</sup>	225 240	3 558 79
	17	18	4	627 40	011 <sup>3</sup>	977 <sup>2</sup>	59 127	5 025 87
	18	12	3	132 00	016	941	55 680	3 274 68
	19	12	3	177 50	028 <sup>2</sup>	899 <sup>2</sup>	100 620	3 175 73
	20	7	1	873 40	038 <sup>2</sup>	881	80 139	1 833 85
	21	9	2	322 00	025	905 <sup>2</sup>	64 500	2 336 19
	22	10	2	706 55	061	793	183 443	2 384 77
	23	11	2	867 50	016	923	50 977	2 940 78
	24	12	3	439 00	034 <sup>2</sup>	890 <sup>2</sup>	131 828	3 402 69

158 280 334 148 656 43

Forward

158 280 334 148 656 113

Forward

Forward

709911441 75634265

Forward

22 1059 917 441 156 342 65

Half Eagle	497	69	6	002 88	602	602 880	6	002 880	12
Ingot	8	69	6	048 76	608	608 800	6	048 760	8
	9	69	6	011 14	609	609 800	6	011 140	009
	500	69	6	030 34	650	650 800	6	030 340	21
	1	69	6	001 70	601	601 800	6	001 700	71
	2	69	6	042 20	602	602 800	6	042 200	12
	3	69	6	021 70	603	603 800	6	021 700	13
	4	69	6	042 11	604	604 800	6	042 110	14
	5	69	6	011 65	605	605 800	6	011 650	15
	6	69	6	031 92	606	606 800	6	031 920	16
	7	69	5	988 97	607	607 800	5	988 970	17
	8	69	6	020 24	608	608 800	6	020 240	18
	9	71	6	180 75	609	609 800	6	180 750	19

LARGE TOTAL

Q. Dollar	728	65	4	027 15					4 027 15
Ingot	9	65	4	007 10					4 007 10
	730	65	4	020 40					4 020 40
	1	65	4	011 35					4 011 35
	2	65	4	015 15					4 015 15
	3	65	4	014 25					4 014 25
	4	65	3	994 40					3 994 40
	5	65	4	031 30					4 031 30
	6	67	4	131 20					4 131 20
	7	65	4	037 15					4 037 15

10

Forward

238 381 801 196 632 10

238 351 801 196 63910

Forward

Mass Melts	1	12	4	067 00	629	314	2	842 381	1	418 93
	2	10	3	534 25	695 <sup>2</sup>	243 <sup>2</sup>	2	731 189		956 21
	3	8	2	508 50	528 <sup>2</sup>	339	1	473 046		944 86
King	509			243 28	899 <sup>3</sup>			243 212		
Assayer's	15			278 86	578 <sup>2</sup>	319 <sup>2</sup>		179 245		98 99
Bars	17			338 55	541	321		203 506		120 74
	18			310 20		992 <sup>3</sup>				342 16
Proof Gold	A			11 50	1000			12 777		
" Silver	B			375 45		1000				417 16
Ingot										
Assay										
Samples	C			156 88	900			156 880		
Fine Silver	7			334 70		999				371 51
Fine Gold	1			14 00	1000			15 555		

GRAND TOTAL

246 209 592 201 302 66

17.

## S U M M A R Y

Gold Deposits	68	418 317	10	448 59
Silver "	7	106 603	28	795 72
Seattle Re-deposits	8	012 324		745 79
Salt Lake "	7	740 561	7	391 13
Ingot	78	434 360	40	289 45
Refinery settlement bars-Gold	63	776 857	6	130 75
" " " Silver	4	384 140	102	830 67
" " " Base		478 639		
" Fine Gold		15 555		
" " Silver				371 51
Mass Melts	7	046 616	3	320 00
Last Ingot Melt King		243 212		
Assayer's bars		382 751		561 89
Ingot Assay samples		156 880		
Proof Gold		12 777		
" Silver				417 16
Total amount delivered by M. & R. in Settlement	246	209 592	201	302 66
under date of June 30, 1909				
Balance charged against M. & R. of same date	245	299 860	199	886 63
Surplus delivered in Settlement		909 732	1	416 03

# INVENTORY

July 1, 1909

Melter and Refiner's Department

## M. & R. Office:

3 roll top desks  
 1 flat top desk  
 1 table  
 5 office chairs  
 1 revolving stool  
 1 - 24 drawer file case  
 1 - 2 compartment wardrobe  
 1 safe  
 3 rugs  
 1 letter press, stand, bath, and accessories  
 1 Oliver typewriter (#132,445), cover, and accessories  
 1 Millionaire calculating machine  
 1 Bates numbering machine  
 1 Jupiter pencil pointer  
 2 brass cuspidors  
 1 desk top on safe  
 2 waste baskets  
 3 desk lamps  
 1 dictionary and stand  
 1 .45 calibre Colt's revolver  
 1 Krag J. rifle  
 1 mirror  
 1 feather duster  
 1 drinking glass

shears, pencils, pens, ink, paper weights, rulers, sponges,  
 pins, erasers, ink-pads, clips, and other office accessories

Getting Gold	1 vol.
Metallurgy of silver, gold and mercury	2 "
Determinative mineralogy & blow-pipe analysis	1 "
Quantitative chemical analysis	2 "
Metallurgy of zinc and cadmium	1 "
The Metallographist	2 "
Richter's organic chemistry	2 "
Caloric power of fuels	1 "
Electro-chemical analysis	1 "
Manual of assaying	1 "
Kent's mechanical engineer's pocketbook	1 "
U.S. Geol. Survey No. 54	1 "
Reports of Director of Mint	8 "
Regulations Mint and assay offices	1 "
Annual report production of precious metals	1 "

Make-up Room:

2 flat top desks  
 1 office chair  
 2 stools  
 1 No. 12 - 8000 oz. bullion balance  
 1 No. 2 - 4000 " " "  
 1 clippings pan & counterpoise, #12 balance  
 1 small pan " " #12 "  
 1 " " " " #2 "  
 2 sets weights, .01 oz. to 400 ozs.  
 2 - 12" electric fans  
 7 trucks  
 6 clipping boxes, copper lined  
 17 ingot " " "  
 3 " " unlined  
 15 copper lock boxes  
 1 hammer  
 1 set steel numbers  
 1 dust pan and brush  
 1 floor brush  
 1 feather duster  
 1 - 3 compartment steel locker  
 1 vault step  
 1 paint can and lettering brush  
 18 - 500 oz. brass weights  
 1 copper oil can  
 1 coin scoop  
 1 tin box for gold filings  
 3 small tin boxes for filings  
 1 Krag J. rifle

Refinery:

1 water-cooled rolling mill  
 1 - 200 ton hydraulic press  
 2 motor generator sets and switch boards, large  
 1 " " " " " " small  
 1 - 3/4 h.p. motor gold cells  
 1 - 1/6 " " laboratory  
 1 - 3/4 " " silver cells  
 1 - 7-1/2 h.p. " elevator  
 1 - 7-1/2 " " Chilian mill  
 1 - 1/4 " " exhaust fan  
 3 - 1/8 " " " "  
 1 microscope  
 1 analytical balance  
 1 assay button "  
 1 " pulp "  
 1 bullion balance, 3' beam  
 1 cupel furnace  
 1 crucible melting furnace  
 1 portable voltmeter  
 1 " ammeter  
 2 stationary recording ammeters  
 1 pyrometer, with Heraeus element  
 1 Alberine stone top table for weighing  
 1 " " " " laboratory  
 1 plate glass hood  
 1 office desk  
 2 " chairs  
 1 book case

Refinery (continued):

Laboratory supplies, acids, salts, and apparatus  
platinum ware, (entire list).  
70 graphite plates  
3 doz. porcelain rods  
301 hard rubber " "  
10 porcelain acid jars  
8 " filters with cocks  
2 " jars, small  
32 " gold cells  
22 earthenware silver cells  
1 " acid jar with cock  
1 " supply tank, silver cells  
7 " filters  
1 " acid jar  
3 " pitchers  
40 porous cells  
4 Rockwell Eng. Co. melting furnaces  
1 " " reverberatory furnace  
2 gold boiling furnaces  
57 #4 cups, graphite  
147 #80 crucibles  
50 #20 " "  
8 #10 " "  
36 #2 " "  
259 - 4" rings  
106 - 2" " "  
41 gold stirrers  
30 flat " "  
273 crucible covers  
6 quarter slides  
12 furnace arches  
21 pedestals  
19 carborundum burner tile  
5 fire brick " "  
2 dumping tables  
4 pouring benches  
3 furnace hoods  
2 charcoal pans  
2 slag pans  
4 large conical moulds  
4 ash cans  
3 shoe moulds  
36 gold anode moulds  
24 fine gold " "  
12 silver merchant bar moulds  
24 " anode " "  
6 - 1000 oz. moulds for fine silver  
8 ingot moulds for cathodes, gold  
32 ingot boxes  
4 clipping boxes  
4 pres. pouring tongs  
1 " ring " "  
2 " charging " "  
1 " stirring " "  
3 " pick up " "  
1 " crucible " "  
4 furnace pokers  
3 cuspidors  
2 mirrors  
Tools--hammers, wrenches, etc.  
*Pickling tank + rock*

Refinery (continued):

31 prs. white rubber gloves  
 10 " asbestos mitts  
 31 " black rubber gloves  
 16 " buck gloves  
 15 trucks  
 2 trucks, ingot rolling  
 1 bbl. powd. charcoal  
 1 " gran. "  
 350 lbs. silica  
 400 " borax glass  
 300 " bicarb. of soda  
 300 " sulphate of iron  
 400 " rock salt  
 350 bone ash  
 100 lbs. nitre  
 600 " sulphuric acid, com.  
 900 " nitric " "  
 960 " hydrochloric acid, com.  
 35 gals. lard oil  
 35 hard rubber baskets  
 26 " " propellers  
 1 flux box  
 2 closets for supplies  
 3 lead lined precipitating tanks  
 2 slag pots  
 1 smelter ladle  
 1 wood filter for silver chloride  
 1 steam shell  
 2 lead lined copper tanks  
 3 lead baskets  
 3 long sleeve rubber gloves  
 77 prs. sleeves  
 8-2/3 doz. aprons  
 1 bolt cheese cloth  
 28 lbs. gelatine  
 426 prs. carpet mitts  
 50 lbs. nitric acid, C.P.  
 200 " sulphuric acid, C.P.  
 75 " hydrochloric acid, C.P.  
 40 " ammonium hydrate "  
 4 tons slab zinc  
 800 lbs. fire clay

Ingot Melting room:

4 trowels  
 1 sledge hammer, 11 handles  
 8 hand hammers  
 3 brick hammers  
 2 monkey wrenches, 14"  
 1 stilson wrench, 10"  
 2 screw drivers  
 4 cold chisels  
 4 crucible tongs  
 1 crow bar  
 2 oil cans, small  
 2 extension lights  
 2 box screens, 24"-24"  
 1 screen, 18"  
 1 pr. callipers  
 2 prs. pliers

Ingot room (continued):

1 magnet  
1 extension divider  
2 electric fans  
1 roll top desk  
1 chair  
2 benches for clipping boxes  
1 lead lined sink  
1 mirror  
1 towel roller  
1 topping shear and 10 h.p. motor  
8 Rockwell furnaces  
5 pouring benches  
2 dumping benches  
28 moulds, D. eagle,  
14 " Eagle  
36 " H. Eagle  
56 " H. Dollar  
54 " Q. Dollar  
18 " Eagle (old size)  
24 " shoe  
4 " conical, 12"  
3 " " 10", 8", 6"  
9 prs. tongs, gold bar  
2 " " silver  
5 " " pouring  
3 " " gold stirrer  
4 " " floor grate  
3 " " crucible  
1 " " ice  
8 " " ingot  
12 sheet iron scoops  
12 poker  
1350 sq. ft. floor grating  
3 waste cans, 15x24  
5 charcoal pans  
6 slag pans  
12 skimming pans  
2 grease pans  
8 furnace hoods  
2 stirring guards  
1 stamping bench  
1 filing bench  
1 set steel figures  
1 anvil  
1 work bench  
1 case for assay samples  
1-2 compartment locker  
1 water cooler  
1 bench vise  
1 ingot stand  
2 sets pickling tanks, lead lined  
2 pickling racks  
2 trucks  
1 oil storage tank  
2 bundling presses for clippings  
3 gal. iron water buckets  
10 silver stirrers  
3 #80 crucibles  
1 #80 " Dixon  
20 #14 crucibles  
10 #4 pouring cups  
22 #3 " "  
16 #2 " . "

Ingot room (continued):

3 - 4" rings  
 2 - 2" "  
 4 gold stirrers  
 4 floor brushes  
 4 flat brushes  
 2 wire brushes  
 9 brass brushes  
 1 - 2" steam syphon  
 22 - 14" files  
 20 prs. Buck mitts  
 24 " " gloves  
 23 aprons  
 74 " asbestos cov'd  
 40 prs. sleeves  
 45 asbestos mitts  
 1 pr. sleeves, asbestos cov'd  
 10 yds cheese cloth  
 14 - 1/2" Powell angle needle valves  
 6 balls cotton twine  
 1 bottle Phenol sodique  
 48 gals. lard oil  
 200 lbs. MXX charcoal  
 250 " MBXX "  
 100 " Bicarb. Soda  
 350 " Nitre  
 150 " Borax glass  
 25 base tile  
 5 top slabs  
 27 furnace tile, body  
 16 " "  
 22 hood tops  
 2530 fire brick  
 400 lbs. fire clay  
 1 flux bin

Sweeps Cellar:

3 shovels  
 2 pcs. ~~xxx~~ brass screen, ea. 36x60  
 2 monkey wrenches, 8", 16"  
 2 brushes, floor, bench  
 1 amalgamating pan, 17"  
 1 water bucket  
 1 wheel barrow  
 2 lbs. cyanide  
 1/8 lb. sodium metal  
 95 lbs. quicksilver  
 1 doz. stove bolts  
 1 pr. cotton blankets  
 1 - 3 lb. hammer  
 40 ft. hose  
 1 Pierce amalgamator  
 8 bottles; 6 soup plates  
 1 Elspass mill  
 1 Jones sampler  
 2 copper plates; 30x120 and 56x96  
 2 settling tanks  
 1 steam drier  
 1 electric fan  
 1 magnet

# MINT OF THE UNITED STATES AT DENVER,

MELTER AND REFINER'S DEPARTMENT,

July 2, 1909.

RECEIVED of Frank M. Downer, Superintendent of the Mint of the United States at Denver, in redelivery after settlement, June 30, 1909, one hundred and sixty-seven thousand seven hundred and seventy-five and two hundred and thirty-two thousandths standard ounces of gold, and one hundred and sixty-one thousand thirteen and twenty-one hundredths standard ounces of silver, itemized as follows:

	Gold	Standard Ounces Silver
Gold Deposits	68,418.317 ✓	10,448.59 ✓
Silver "	7,106.603 ✓	28,795.72 ✓
Seattle Re-deposits	8,012.324 ✓	745.79 ✓
Salt Lake "	7,740.561 ✓	7,391.13 ✓
Refinery settlement bars--Gold	63,776.857 ✓	6,130.75 ✓
" " " Silver	4,384.140 ✓	102,830.67 ✓
" " " Base	478.639 ✓	
	15.555 ✓	
Fine Gold		371.51 ✓
Fine Silver	7,046.616 ✓	3,320.00 ✓
Mass Melts	243.212 ✓	
Last Ingot Melt King	382.751 ✓	561.89 ✓
Assayers Bars	156.880 ✓	
Ingot Assay Samples	12.777 ✓	
Proof Gold		417.18 ✓
" Silver		
Totals	167,775.232 ✓	161,013.21 ✓

*For Wilson*  
Melter and Refiner.

## Accounting for Surplus returned by Meltor and Refiner for 1909

	Standard Ozs. Gold	Standard Ozs. Silver
Gain on Ingots	116.820	1,406.84
" " Deposits, gross 84.52	65.730	18.78
" in Refinery, excluding gain on deposits	533.956	
" " Deposit Melting Room, ---metal	231.480	144.99
" " " " " tailings	30.550	110.00
" from excess returned by Assayer	19.721	188.71
" " settling well, ---metal	98.540	48.60
" " " " " tailings	70.380	77.93
Total gain	1,167.177	1,995.85
Surplus	909.732	1,416.03
Operating; Wastage	257.445	579.82

\* "Metal," recovered by operations in Sweeps cellar from crucibles and fire bricks.

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

July 6, 1909.

Mr. A. A. Hassan,

Chairman Settlement Commission,

Denver Mint.

Dear Sir:

Responding to your recent request therefor, I respectfully present the following statement, showing in standard ounces the total amount of bullion delivered to the Ingot Melting room during the fiscal year 1909, and the amount of metal returned in ingots and bars, the recovery from sweeps and other sources, and the apparent gain:

GOLD

Del'd to ingot room for ingots	2,866,333.080	
" " " " " bars	<u>535.659</u>	2,866,868.739
Returned in ingots	2,794,075.360	
" " bars	535.659	
" " tops, etc.	<u>71,555.670</u>	2,866,166.689
Apparent loss		702.050
Recovery from sweeps	733.194	
" " other sources	<u>348.974</u>	1,082.168
Apparent total gain		380.118

MINT OF THE UNITED STATES AT DENVER,  
MELTER AND REFINER'S DEPARTMENT,

2

SILVER

Delivered to Ingot room for ingots	2,862,371.81	
" " " " " Bars	345.95	2,862,717.76
Returned in Ingots	2,804,277.85	
" " Bars	345.95	
" " Tops, etc.	55,715.96	2,860,339.76
Apparent loss		2,378.00
Recovery from Sweeps	1,654.81	
" " Other sources	943.58	2,598.39
Apparent total gain		220.39

Respectfully submitted,

*Joe Williams*  
Melter and Refiner.

1. Product: None -- all settlement expense.

2. Costs:	a. Labor	\$783.05
	b. Crucibles	60.00
	c. Acids	25.04
	d. Supplies	101.86
	e. Mitts, gloves, aprons	14.50
	f. Chemicals	0.00
	g. Sweeps Cellar	197.79
	h. M. & R. Gen'l	208.33
	i. Fuel	24.00
	j. Power	46.90
	k. Repairs	404.07
	l. Light & ventilation	50.00
	m. Incidentals	1.00
	n. Assays	0.00
	o. Sick leave, vacation & holidays	555.99

Total \$2,472.63

3. New Equipment 770.39 (including labor \$471.50)

Total expense \$3,242.92

Nos. 4, 5, 6, 7, and 9--no items

8. Average cost per ounce operated upon for fiscal year .013789

10 " " " crude ounce " " " " " .022973

#### SWEEPS CELLAR

1. Produce:	a. Gold, std. ozs.	367.937
	b. Silver " "	522.38
	c. Tailings, avoird. lbs.	20,315

2. Costs:	a. Labor	\$139.50
	b. Power	88.27
	c. Light & ventilation	44.76
	d. Supplies	11.53
	e. Repairs	9.25
	f. Incidentals	0.50
	g. Sick leave &c	81.50
	Total	\$375.31

3. New Equipment 0.00

Total expense \$375.31

4. Tailings contained: a. Gold 89.758  
b. Silver 369.08

5. Percentage of extraction: a. Gold 80.3  
b. Silver 58.6

6. Departments charged as follows:

Refinery	\$197.79
Ingot room	177.52
Total	\$375.31

June/09

## INGOT ROOM

1. Amount of bullion melted:	a. Gold	216,704.360
	b. Silver	<u>65,753.790</u>
	Total	282,458.150
2. Amount of good ingots:	a. Half Eagles	211,132.990
	b. Quar. Dollars	<u>64,455.75</u>
	Total	275,588.740

3. Cost of Ingots:	Gold		Silver		Total
	Total	Per oz.	Total	Per oz.	
a. Labor	\$276.07	.001307	\$138.04	.002141	\$414.11
b. M. & R. Gen'l	138.89	.000657	69.45	.001077	208.34
c. Mitts & gloves	4.75	.000032	4.00	.000062	8.75
d. Crucibles	21.69	.000102	8.84	.000137	30.52
e. Sweeps cellar	118.35	.000560	59.17	.000917	177.52
f. Supplies	19.29	.000091	4.25	.000065	23.54
g. Fuel	43.20	.000204	23.10	.000358	66.30
h. Power	28.40	.000134	14.20	.000220	42.60
i. Light & ventila'n	33.33	.000157	16.67	.000258	50.00
j. Repairs	18.91	.000089	9.46	.000146	28.37
k. Incidentals	0.47	.000002	0.23	.000003	0.70
l. Sick leave &c	175.79	.000832	87.89	.001363	263.68
m. Alloy copper	109.15	.000516	33.93	.000526	143.07
	<u>\$938.28</u>		<u>\$469.23</u>		<u>\$1,457.50</u>
Work for Coiner	101.98		50.99		152.97
Totals	\$886.30	.004197	\$418.23	.006488	\$1,304.53

(Settlement costs in above amounts, \$105.46)

## 4. New Equipment

0.00

Total expense

\$1,304.53

5. Percentage of good ingots:	a. Gold	97.4
	b. Silver	98.0

6. Average cost of ingots for fiscal year:	a. Gold	.003642
	b. Silver	.004020

7. Cost distributed as follows:	a. Half Eagles	\$886.30
	b. Quarter dollars	<u>418.23</u>
	Total	\$1,304.53



